Online ISSN : 0975-4172 Print ISSN : 0975-4350

GLOBAL JOURNAL of Computer Science and Technology : G INTERDISCIPLINARY

DISCOVERING THOUGHTS AND INVENTING FUTURE



Issue 11

Approach to Advance Computer

Analysis of E-Governance

Classification and Support Vector

Opportunities and Solar Energy

Robonaut Vs. Human

Volume 12

2001-2012 by Global Journal of Computer Science and Technology, US

Version 1.0

ENG



Global Journal of Computer Science and Technology: G Interdisciplinary

Global Journal of Computer Science and Technology: G Interdisciplinary

Volume 12 Issue 11 (Ver. 1.0)

Open Association of Research Society

© Global Journal of Computer Science and Technology.2012.

All rights reserved.

This is a special issue published in version 1.0 of "Global Journal of Computer Science and Technology "By Global Journals Inc.

All articles are open access articles distributedunder "Global Journal of Computer Science and Technology"

Reading License, which permits restricted use. Entire contents are copyright by of "Global Journal of Computer Science and Technology" unless otherwise noted on specific articles.

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without written permission.

The opinions and statements made in this book are those of the authors concerned. Ultraculture has not verified and neither confirms nor denies any of the foregoing and no warranty or fitness is implied.

Engage with the contents herein at your own risk.

The use of this journal, and the terms and conditions for our providing information, is governed by our Disclaimer, Terms and Conditions and Privacy Policy given on our website <u>http://globaljournals.us/terms-and-condition/</u> <u>menu-id-1463/</u>

By referring / using / reading / any type of association / referencing this journal, this signifies and you acknowledge that you have read them and that you accept and will be bound by the terms thereof.

All information, journals, this journal, activities undertaken, materials, services and our website, terms and conditions, privacy policy, and this journal is subject to change anytime without any prior notice.

Incorporation No.: 0423089 License No.: 42125/022010/1186 Registration No.: 430374 Import-Export Code: 1109007027 Employer Identification Number (EIN): USA Tax ID: 98-0673427

Global Journals Inc.

(A Delaware USA Incorporation with "Good Standing"; Reg. Number: 0423089) Sponsors.Global Association of Research Open Scientific Standards

Publisher's Headquarters office

Global Journals Inc., Headquarters Corporate Office, Cambridge Office Center, II Canal Park, Floor No. 5th, *Cambridge (Massachusetts)*, Pin: MA 02141 United States USA Toll Free: +001-888-839-7392 USA Toll Free Fax: +001-888-839-7392

Offset Typesetting

Global Association of Research, Marsh Road, Rainham, Essex, London RM13 8EU United Kingdom.

Packaging & Continental Dispatching

Global Journals, India

Find a correspondence nodal officer near you

To find nodal officer of your country, please email us at *local@globaljournals.org*

eContacts

Press Inquiries: *press@globaljournals.org* Investor Inquiries: *investers@globaljournals.org* Technical Support: *technology@globaljournals.org* Media & Releases: *media@globaljournals.org*

Pricing (Including by Air Parcel Charges):

For Authors:

22 USD (B/W) & 50 USD (Color) Yearly Subscription (Personal & Institutional): 200 USD (B/W) & 250 USD (Color)

EDITORIAL BOARD MEMBERS (HON.)

John A. Hamilton,"Drew" Jr.,

Ph.D., Professor, Management Computer Science and Software Engineering Director, Information Assurance Laboratory Auburn University

Dr. Henry Hexmoor

IEEE senior member since 2004 Ph.D. Computer Science, University at Buffalo Department of Computer Science Southern Illinois University at Carbondale

Dr. Osman Balci, Professor

Department of Computer Science Virginia Tech, Virginia University Ph.D.and M.S.Syracuse University, Syracuse, New York M.S. and B.S. Bogazici University, Istanbul, Turkey

Yogita Bajpai

M.Sc. (Computer Science), FICCT U.S.A.Email: yogita@computerresearch.org

Dr. T. David A. Forbes

Associate Professor and Range Nutritionist Ph.D. Edinburgh University - Animal Nutrition M.S. Aberdeen University - Animal Nutrition B.A. University of Dublin- Zoology

Dr. Wenying Feng

Professor, Department of Computing & Information Systems Department of Mathematics Trent University, Peterborough, ON Canada K9J 7B8

Dr. Thomas Wischgoll

Computer Science and Engineering, Wright State University, Dayton, Ohio B.S., M.S., Ph.D. (University of Kaiserslautern)

Dr. Abdurrahman Arslanyilmaz

Computer Science & Information Systems Department Youngstown State University Ph.D., Texas A&M University University of Missouri, Columbia Gazi University, Turkey **Dr. Xiaohong He** Professor of International Business University of Quinnipiac BS, Jilin Institute of Technology; MA, MS, PhD,. (University of Texas-Dallas)

Burcin Becerik-Gerber

University of Southern California Ph.D. in Civil Engineering DDes from Harvard University M.S. from University of California, Berkeley & Istanbul University

Dr. Bart Lambrecht

Director of Research in Accounting and FinanceProfessor of Finance Lancaster University Management School BA (Antwerp); MPhil, MA, PhD (Cambridge)

Dr. Carlos García Pont

Associate Professor of Marketing IESE Business School, University of Navarra

Doctor of Philosophy (Management), Massachusetts Institute of Technology (MIT)

Master in Business Administration, IESE, University of Navarra

Degree in Industrial Engineering, Universitat Politècnica de Catalunya

Dr. Fotini Labropulu

Mathematics - Luther College University of ReginaPh.D., M.Sc. in Mathematics B.A. (Honors) in Mathematics University of Windso

Dr. Lynn Lim

Reader in Business and Marketing Roehampton University, London BCom, PGDip, MBA (Distinction), PhD, FHEA

Dr. Mihaly Mezei

ASSOCIATE PROFESSOR Department of Structural and Chemical Biology, Mount Sinai School of Medical Center Ph.D., Etvs Lornd University Postdoctoral Training,

New York University

Dr. Söhnke M. Bartram

Department of Accounting and FinanceLancaster University Management SchoolPh.D. (WHU Koblenz) MBA/BBA (University of Saarbrücken)

Dr. Miguel Angel Ariño

Professor of Decision Sciences IESE Business School Barcelona, Spain (Universidad de Navarra) CEIBS (China Europe International Business School). Beijing, Shanghai and Shenzhen Ph.D. in Mathematics University of Barcelona BA in Mathematics (Licenciatura) University of Barcelona

Philip G. Moscoso

Technology and Operations Management IESE Business School, University of Navarra Ph.D in Industrial Engineering and Management, ETH Zurich M.Sc. in Chemical Engineering, ETH Zurich

Dr. Sanjay Dixit, M.D.

Director, EP Laboratories, Philadelphia VA Medical Center Cardiovascular Medicine - Cardiac Arrhythmia Univ of Penn School of Medicine

Dr. Han-Xiang Deng

MD., Ph.D Associate Professor and Research Department Division of Neuromuscular Medicine Davee Department of Neurology and Clinical NeuroscienceNorthwestern University

Feinberg School of Medicine

Dr. Pina C. Sanelli

Associate Professor of Public Health Weill Cornell Medical College Associate Attending Radiologist NewYork-Presbyterian Hospital MRI, MRA, CT, and CTA Neuroradiology and Diagnostic Radiology M.D., State University of New York at Buffalo,School of Medicine and Biomedical Sciences

Dr. Roberto Sanchez

Associate Professor Department of Structural and Chemical Biology Mount Sinai School of Medicine Ph.D., The Rockefeller University

Dr. Wen-Yih Sun

Professor of Earth and Atmospheric SciencesPurdue University Director National Center for Typhoon and Flooding Research, Taiwan University Chair Professor Department of Atmospheric Sciences, National Central University, Chung-Li, TaiwanUniversity Chair Professor Institute of Environmental Engineering, National Chiao Tung University, Hsinchu, Taiwan.Ph.D., MS The University of Chicago, Geophysical Sciences BS National Taiwan University, Atmospheric Sciences Associate Professor of Radiology

Dr. Michael R. Rudnick

M.D., FACP Associate Professor of Medicine Chief, Renal Electrolyte and Hypertension Division (PMC) Penn Medicine, University of Pennsylvania Presbyterian Medical Center, Philadelphia Nephrology and Internal Medicine Certified by the American Board of Internal Medicine

Dr. Bassey Benjamin Esu

B.Sc. Marketing; MBA Marketing; Ph.D Marketing Lecturer, Department of Marketing, University of Calabar Tourism Consultant, Cross River State Tourism Development Department Co-ordinator, Sustainable Tourism Initiative, Calabar, Nigeria

Dr. Aziz M. Barbar, Ph.D.

IEEE Senior Member Chairperson, Department of Computer Science AUST - American University of Science & Technology Alfred Naccash Avenue – Ashrafieh

PRESIDENT EDITOR (HON.)

Dr. George Perry, (Neuroscientist)

Dean and Professor, College of Sciences Denham Harman Research Award (American Aging Association) ISI Highly Cited Researcher, Iberoamerican Molecular Biology Organization AAAS Fellow, Correspondent Member of Spanish Royal Academy of Sciences University of Texas at San Antonio Postdoctoral Fellow (Department of Cell Biology) Baylor College of Medicine Houston, Texas, United States

CHIEF AUTHOR (HON.)

Dr. R.K. Dixit M.Sc., Ph.D., FICCT Chief Author, India Email: authorind@computerresearch.org

DEAN & EDITOR-IN-CHIEF (HON.)

Vivek Dubey(HON.)	Er. S
MS (Industrial Engineering),	(M. 1
MS (Mechanical Engineering)	SAP
University of Wisconsin, FICCT	CEO
Editor-in-Chief USA	Tech
	Web
editorusa@computerresearch.org	Emai
Sangita Dixit	Prite
M.Sc., FICCT	(MS)
Dean & Chancellor (Asia Pacific)	Calif
deanind@computerresearch.org	BF (C
Suyash Dixit	Tech
B.E., Computer Science Engineering), FICCTT	Emai
President, Web Administration and	Luis
Development - CEO at IOSRD	J!Res
COO at GAOR & OSS	Saarl

Er. Suyog Dixit

(M. Tech), BE (HONS. in CSE), FICCT SAP Certified Consultant CEO at IOSRD, GAOR & OSS Technical Dean, Global Journals Inc. (US) Website: www.suyogdixit.com Email:suyog@suyogdixit.com **Pritesh Rajvaidya** (MS) Computer Science Department California State University BE (Computer Science), FICCT Technical Dean, USA Email: pritesh@computerresearch.org

Luis Galárraga

J!Research Project Leader Saarbrücken, Germany

Contents of the Volume

- i. Copyright Notice
- ii. Editorial Board Members
- iii. Chief Author and Dean
- iv. Table of Contents
- v. From the Chief Editor's Desk
- vi. Research and Review Papers
- 1. Early Computer VS Modern Computer: A Comparitive Study and an Approach to Advance Computer. *1-14*
- 2. Multiclass Classification and Support Vector Machine. *15-19*
- 3. Optimized Round Robin CPU Scheduling Algorithm. 21-25
- 4. Analysis of E-Governance Status and Future of E-Governance in Punjab. 27-38
- 5. Technological Opportunities and Solar Energy, to Contribute to Sustainable Development of Mexico. *39-47*
- vii. Auxiliary Memberships
- viii. Process of Submission of Research Paper
- ix. Preferred Author Guidelines
- x. Index



GLOBAL JOURNAL OF COMPUTER SCIENCE AND TECHNOLOGY INTERDISCIPLINARY Volume 12 Issue 11 Version 1.0 Year 2012 Type: Double Blind Peer Reviewed International Research Journal Publisher: Global Journals Inc. (USA) Online ISSN: 0975-4172 & Print ISSN: 0975-4350

Early Computer VS Modern Computer: A Comparitive Study and an Approach to Advance Computer

By Zobair Ullah

Sam Higginbottom Institute of Agriculture, Allahabad

Abstract - In this paper, emphasis has been given on the gradual and continuous advancement of computer from on and before 300BC to 2012 and beyond. During this very long period of time, a simple device like computer has witnessed many significant changes in its manufacturing and development. By and large, the changes are conceptual, manufacturing and in ever increasing applications.

Keywords : computer, abacus, napier bones, punched cards, analytic engine, vacuum tubes, mainframe computer, transistors, integrated circuits, ram, microprocessor, hard disk, printed circuit board, motherboard, artificial intelligence, voice recognition, quantum computing, nanotechnology, natural language.

GJCST-E Classification: K.2

EARLY COMPUTER VS MODERN COMPUTER A COMPARITIVE STUDY AND AN APPROACH TO ADVANCE COMPUTER

Strictly as per the compliance and regulations of:



© 2012. Zobair Ullah. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License http://creativecommons.org/licenses/by-nc/3.0/), permitting all non-commercial use, distribution, and reproduction inany medium, provided the original work is properly cited.

Early Computer VS Modern Computer: A Comparitive Study and an Approach to Advance Computer

Zobair Ullah

Abstract - In this paper, emphasis has been given on the gradual and continuous advancement of computer from on and before 300BC to 2012 and beyond. During this very long period of time, a simple device like computer has witnessed many significant changes in its manufacturing and development. By and large, the changes are conceptual, manufacturing and in ever increasing applications.

Keywords : computer, abacus, napier bones, punched cards, analytic engine, vacuum tubes, mainframe computer, transistors, integrated circuits, ram, microprocessor, hard disk, printed circuit board, motherboard, artificial intelligence, voice recognition, quantum computing, nanotechnology, natural language.

I. INTRODUCTION

ince time immemorial and still today man has been feeling the need to compute, count, store and get accurate results all the time and always. It is guite apparent and significant that in our daily life, we need to keep written records what we have done in the past, basically in the form of numerals to increase productivity, growth and efficiency. In the past, man had felt the need to prepare navigational table, logarithmic table and trigonometric table for which the man himself was not efficient. From the history of computational work done in the past, man has observed the following shortcomings/limitations/demerit in the manual computational work. The demerits include: a) man/woman cannot work continuously for a longer period of time. b) Problem of short memory (memory loss) c) repetitive task is boredom d) results are prone to error (problem of inaccuracy) e) not efficient for scientific calculation.

In order to find the solution of the above problems, man has been continuously searching and inventing machine to replace man with machines to get the desired and accurate result. So in this paper, some of the early but significant achievements of man in the field of computing have been enumerated as under.

II. Definition

a) Computer in the past

The term 'computer' is derived from the Latin word "computare" meaning to calculate. In the past, computer is restricted only to arithmetic calculations.

b) Computer in modern form

Computer is defined as an advanced electronic device that takes raw data as input from the user and process these data under the control of set of instructions called program and gives the result called output and saves output for the future use.

III. EARLY COMPUTERS

a) Computers before 300BC

Men/Women: --- During this period, the word computer was used to describe human beings (basically women). Their primary job was to perform the repetitive calculations like navigational tables, tide charts and planetary positions for astronomical almanacs. Therefore, we can say that a group of intelligent women were first computers.

- i. Disadvantages of human computer
- Repetitive job is boring
- Carelessness leads to error
- Not good and efficient for longer period of time
- Accuracy problem
- Team work
- A lot of space needed to set up laboratory/office
- Time consuming

These problems forced man to search for a new method, device, technique or a mechanism to solve real world problems quickly, accurately and efficiently.

b) Computers at 300BC

To get rid of human errors, man had developed a calculating machine called ABACUS. It was first developed, invented and used by the Babylonians.

- i. Salient features of Abacus
- Abacus aids the memory of the human performing the calculation.
- Addition and subtraction can be done efficiently but multiplication and division are slower.

Year 2012

Author : Sam Higginbottom Institute of Agriculture, Technology & Sciences, Allahabad. E-mail : zobair hzb@yahoo.co.in

• Accurate results can be obtained

The Abacus is still in use today, principally in the far East.



Fig. 1 : A typical operation back when computers were people



Fig. 2 : A very old Abacus



Fig. 3 : Modern Abacus

c) 1617

After a long period, in 1617 a new scientist Scotsman named John Napier came up with new ideas. He invented logarithms, which is a technology that allows multiplication to be performed via addition. Napier also invented an alternative to tables, where the logarithmic values were carved on ivory sticks which are now called Napier's bones.



Fig. 4 : An original set of Napier's Bones [Photo courtesy IBM]



Fig. 5 : A more modern set of Napier's Bones

d) 1623

Calculating clock: It is the first gear-driven calculating machine. It is invented by the German professor Wilhelm Schickard.



Fig. 6 : Schickard's calculating clock

e) 1642

In 1642 Blaise Pascal invented the gear driven Pascaline to add numbers.



Fig. 7: Pascal's Pascaline[photo IEEE 2002]

i. Gottfried Wilhelm Leibniz

He built a four function (addition, subtraction, multiplication and division) calculator called the stepped reckoner because instead of gears, it employed fluted drums having ten flutes arranged around their circumference in a stair step fashion.



Fig. 8 : Leibniz's stepped Reckoner

f) 1801

Joseph Marie Jacquard: A Frenchman who invented a power loom. This invention paved the path for inventing punched card. The invention of punched is considered as the major contribution and development in the development of advanced computer.



Fig. 9 : Jacquard's power Loom with punched card



Fig. 10 : View of Jacquard card

g) 1822

Charles Babbage: The English mathematician proposed a stream driven calculating machine called

the Difference engine. The machine would be able to compute tables of numbers, such as logarithmic table. But unfortunately the project of Difference Engine failed due to over expense. Soon after Babbage had introduced a new machine called Analytic Engine powered by six steam engines. In this project Babbage had used punched card to store numbers for future use and a mechanism to get result. Charles Babbage had divided Analytic Engine into two parts the "store" and the "Mill". The term "store" indicates the place where numbers are held and the "Mill" indicate the place where numbers are processed to give new results.



Fig. 11 : Babbage's Difference Engine [photo 2002 IEEE]

The development of the Analytic engine with the idea of "store" and "Mill" is considered as the major breakthrough in computer history because in a modern computer the same kind of parts are called the memory unit and the central processing unit (CPU).Due to this reason only, he is called the father of modern computer.

h) 1890

Hollerith: He had the insight to convert punched card to what is today called a read/write technology. Hollerith built a company, the tabulating machine company which after a few buyouts eventually became International Business machines, known today as IBM.



Fig. 12 : Hollerith Desk

- i. Some application of manual/mechanical computer
- Efficient in arithmetic calculations like addition, subtraction, multiplication and division.
- Using these computer man has succeeded in preparing logarithmic table and trigonometric table.
- The computers were restricted only to scientific use.
- ii. Parts of Early computer
- Human Brain---(Human Intelligence) ---- Before 300BC
- Abacus------ Rings, Rods, Pebbles
- Napier Bones ----- Ivory sticks carved with numbers
- Calculating Clock ----- iron gear driven calculating machine
- Pascaline ---- gears and cylinders
- Leibniz stepped reckoner ------ ten flutes drum
- Jacquard power loom (punched card)----- punched wooden cards
- Difference engine/Analytic engine ----steam engines
 and punched cards
- Hollerith desk ---- holes cards, a gear driven mechanism
- Mark 1---- switches, relays, rotating shaft and clutches and electric motor
- Vacuum tubes----- three legged arrangement to amplify current

- Transistors----- Germanium, paper clips and razor blades
- IC (Integrated Circuit) ---- transistors
- DRAM ---- capacitor (To store data in the form of electric charge)
- ENIAC ----- vacuum tubes, card readers, patch cords
- UNIVAC ----- magnetic tapes
- Drum memory----- metal cylinder coated with recordable ferromagnetic material
- Magnetic core memory ----- ferrite core memory, magnetic ceramic rings

IV. DEVELOPMENT AND INVENTION OF ELECTRONIC DEVICE/COMPUTER

a) 1943

ENIAC--- (Electronic Numerical Integrator and Calculator). It was the first electronic digital computer, built at the university of Pennsylvania between 1943 and 1945 by two professors John Mauchly and J.Presper Eckert. ENIAC requires 20 by 40 foot room, weighed 30 tons, and used more than 18000 vacuum tubes.



Fig. 13 : ENIAC [U.S Army photo]

b) 1944

Harvard's Mark1: He built partnership with IBM and developed the first programmable digital computer in USA. But it was not a purely electronic computer. He had used switches, relays, rotating shafts and clutches. The Mark1 was capable to operate on numbers that were 23 digits wide.

© 2012 Global Journals Inc. (US)

2012

Year



Fig. 14 : The Harvard Mark1: An electro mechanical computer

i. Mainframe computer

The development of mainframe computer before 1947. Before the invention of microprocessor, computers were built in mainframes, with components which were connected by a backplane that had countless slots for connecting wires. With the invention of PCB (Printed circuit Board) wires needed to connect card connector pins in mainframes have been replaced with PCB. The CPU, memory and other peripherals are all installed on PCB and the size is reduced to a large extent.



Fig. 15 : Typical wiring of an early mainframe computer [photo courtesy: The computer museum]

c) 1947

William Shockley, John Bardeen and Walter Brattain: They successfully build the first transistor at Bell Labs. In 1950 William Shockley develops the bipolar junction transistor, the device most commonly referred to as a transistor by today's standard. The invention of transistor in 1947 is considered as a revolution because in digital computer like ENIAC it quickly replaced the traditional vacuum tubes. Strong reasons for the replacement are as under:

- Transistors amplify current much more quickly than vacuum tubes.
- Transistors do not generate lot of heat whereas vacuum tubes generate lot of heat.
- Transistors size is very small and light weight in comparison to vacuum tubes. So transistors helped a lot in making small size computer.
- Transistors do not generally burn whereas vacuum tube has a tendency to burn. So vacuum tubes are not cost effective, reliable and safe. For instance, the first digital computer ENIAC used around 18000 vacuum tubes that constantly burned out, making it very unreliable, problematic, unsafe and erroneous.



Fig. 16 : Vacuum tubes [A three terminal devices called triodes]/Transistor



Fig. 17: The first point contact transistor

i. Function of transistors

The transistor acts like a switch. It can turn electricity on or off, or it can amplify current. In modern computers it is used to store information and in stereo amplifiers to make the sound signal strong.

d) 1958

The development and invention of IC (Integrated circuit) took place in the year 1958 by two great engineers Jack Kilby and Robert Noyce. The development was the result of the microelectronics revolution started in 1947. In an IC millions of transistors can be created and interconnected. All the elements on the IC are fabricated simultaneously via a small number (may be 12) of optical masks that define the geometry of each layer. The development of IC speeds up the

process of fabricating the computer and equally responsible for reducing the size and its cost.





Fig. 18 : An integrated circuit (silicon chip) [photo courtesy of IBM]

i. Importance of IC in modern computer development

The impact of this tiny chip has been far reaching. The chip virtually created the modern computer industry, transforming past room size machines into today's array of mainframes, minicomputers and personal computers.

V. Development of Modern/Fourth Generation Computers

a) 1970—1972

Invention of RAM: Between 1970 and 1972 computer memory on an IC or chip was developed. This memory was named as random Access Memory (RAM). It allowed data to be accessed randomly, not just in the sequence it was recorded. DRAM (Dynamic Random Access Memory) is the most common kind of RAM for personal computers. Intel released the 1103 chip, the first generally available DRAM memory chip. The introduction of 1103 DRAM was considered as a turning point in the history of IC. For the first time, significant amount of information could be stored on a single chip.



Fig. 19 : 1103 chip

b) 1971

Invention of microprocessor: In 1971 Intel introduced Intel 4004, the first commercially available single chip microprocessor. This was considered as the first single chip microprocessor in mankind history. It was a 4-bit CPU designed for usage in calculators.



Fig. 20 : Intel 4004 microprocessor

This development marked the new era of Integrated circuit.

i. Some Advanced Intel Pentium processors are



Fig. 21 : Pentium 60MHZ microprocessor for desktop

drive, the predecessor of all current hard disk drives. Its storage capacity was 30 Mbytes. In 1980, Seagate technology introduced the first hard disk drive for microcomputers, the ST506.



Fig. 23 : Seagate Hard Disk Drive [ST506]

In 1997 Seagate introduced the first 7200 RPM, ultra ATA hard disk drive for desktop computers.



Fig. 24 : Advanced Hard disk drives

d) PCB (Printed circuit board)

It is a device that provides electrical interconnections and a surface for mounting electronic components. In 1903 the first PCB was made by Dr Paul Eisler, an Austrian scientist working in England.



Fig. 22 : Mobile Pentium MMX processor

Modern processors are designed by two distinct companies: Intel and Advanced Micro Devices (AMD).

C) 1973

Invention of Hard Disk Drives: In 1973 IBM introduced the model 3340 Winchester sealed hard disk



Fig. 25 : Modern printed circuit board

e) Motherboard

Motherboard is the most important part of modern computer. It is very difficult to think about modern computers without a motherboard. Motherboard is by and large responsible for smaller size computers. A motherboard is a PCB found in all modern computers. It holds many of the crucial components of the system such as the CPU, memory and connectors for other peripherals. It is also known as the main board, system board, planar board or logic board.



Fig. 26 : Modern Intel motherboard



Fig. 27 : Facilities provided by modern motherboards

i. Motherboard manufacturing companies of the world

(1) Micronics 2) Mylex 3) AMI 4) DTX 5) Orchid Technology 6) Elitegroup 7) Apple 8) IBM

Now a day's Apple and IBM are producing sophisticated motherboards with upgraded features and superior performance.

- f) Parts of Modern computer
- PCB: Bakelite, Masonite, layered card board
- Motherboard: Capacitor, inductor, resistor, diode, transistor
- Microprocessor: ceramic material, plastic
- RAM: IC, PCB, semiconductor material
- Hard disk: stepper motor, hydraulic actuators
- **Software:** System software, Application software, utility software

VI. Generations of Electronic Computer

Major technological changes in the development of modern electronic computer are referred to as generations of computer. The technological changes in the development of computer resulted in smaller, cheaper, more powerful, more energy efficient, low maintenance, good performance and fast computer. The development of electronic computer has witnessed the following five generations.

- a) First Generation of computer (1940-1956)
- The first electronic computer used vacuum tubes for circuitry and magnetic drums for memory.
- Dependent on machine language.
- The first generation computers are UNIVAC and ENIAC.

b) Second Generation of Computer (1956-1963)

- Transistors replaced vacuum tubes. This allowed computers to become smaller, faster, cheaper, more energy efficient and reliable than first generation of computers.
- Second generations of computer used punched cards for input and printouts for output.
- Assembly language was used instead of machine language.
- Magnetic core technology was used for memory instead of magnetic drums.
- c) Third Generation of Computer (1964-1971)
- Integrated circuit (IC) replaced transistors. Transistors were miniaturised and placed on silicon chips called semiconductors which drastically increased the speed and efficiency of computers.
- Keyboards, monitors and operating system were introduced in this generation.
- Computers become accessible to a mass audience.
- d) Fourth Generation of Computer (1971-2005)
- Microprocessors replaced IC. Example Intel 4004 chip.

- IBM and Apple introduced computers for the home users.
- Desktop computers were introduced in this generation.
- Computers became more powerful. Computers could be linked together to form networks which eventually led to the development of the internet.
- GUI (Graphical User Interface), the mouse and handheld devices have been introduced.
- Extensive use of computer software based on the conversion of high level language into machine readable language called low level language.



Fig. 28 : Fourth generation desktop computer



Fig. 29 : Fourth generation laptop computer

Factors responsible in increasing computer speed

i. High capacity of RAM (Random Access Memory)

More RAM the computer has, the better will be its speed and performance. The speed of the RAM connection directly controls how fast the computer can access instructions and data. Therefore, it has a big effect on system performance. Much of the memory available today is dual data rate (DDR) memory. This means that the memory can transmit data twice per cycle instead of once, which makes the memory faster.

- ii. Design of advanced motherboards
- Newer motherboards provide facility to connect to the north bridge via a dual bus instead of a single bus. This reduces the amount of time it takes for the processor to get information from the memory.
- Newer motherboards provide space or slots for multiple memory chips to increase computer speed.

iii. Design of microprocessor

As we increase the number of transistors, the processor become faster. The drastic increase in number of transistors resulted in tremendously fast processors. For instance, in 1971 the Intel 4004 chip contained 2300 transistors only and was considered as a very slow processor. But in 1993 the Intel had launched a very fast processor namely Pentium chip that contained 3,100,000 transistors. The following technologies have been employed to increase the number of transistors in ac IC or a chip. These are commonly referred to as generations of IC.

- Small scale Integration (SSI) (1960): It is an IC that contains 3 to 30 transistors on a single chip.
- Medium scale Integration (MSI) (1960): It is an IC that contains 30 to 300 transistors on a single chip.
- Large scale Integration (LSI) (1970): It is an IC that contains 300 to 3000 transistors on a single chip.
- Very large scale Integration (VLSI) (1980): It is an IC that contains more than 3000 transistors on a single chip.
- Ultra large scale Integration (ULSI) (1980): It is an IC that contains more than 1 million transistors on a single chip.
- iv. Some application of modern/ fourth generation computer
- Can be used at home and office for data storage and fast data retrieval.
- Can be used for entertainment purpose like playing games, listening music and watching videos.
- Can be used to exchange information among different computers.
- Teleconferencing and remote access is made possible.
- By making application software electronic digital computer can be used anywhere. Therefore, it can be considered as a versatile machine.
- e) Fifth Generation of Computers (2005 onwards) (still under development)
- Fifth generation computing devices are based on Artificial Intelligence.
- Voice recognition concept has been introduced.
- Parallel processing and superconductor techniques have been introduced.
- Quantum computation technique, molecular technique and also Nanotechnology has been introduced.
- Scientists are trying to develop devices that are capable of learning, respond to natural language and self organisation.
- Fifth generation computing is still under research and development.

i. Advancement in fifth generation computing

The fifth generation computing is totally a new concept of developing computers. It does not match with the past or early developments of computer. In this generation of computer man is trying to incorporate the human characteristics or features like outstanding problem solving ability, high level deliberative reasoning, and pattern recognition. The approach definitely remove the demerits of fourth generation computer and will prove to be a more reliable and versatile machine ever made by mankind. The new techniques used to achieve the above target are Artificial Intelligence (AI), voice recognition, quantum computation and Nanotechnology. Here, we first try to understand the following terms one by one.

ii. Artificial Intelligence (AI)

It is a branch of science that believes in making computers or machines that can find solutions to complex problems in a more human like fashion. Research on AI has focussed chiefly on the following components of intelligence: learning, reasoning, problem solving, perception and human language understanding.

iii. Applications of Artificial Intelligence (AI)

- Advance computer game playing and robotics pets.
- Speech recognition by a computer
- Understanding natural language by a computer
- Identifying 3 dimensional objects by a computer
- Developing expert system in medical science by a computer

iv. Voice recognition

Voice recognition refers to the ability of a machine to receive and interpret dictation, words or phrases spoken by humans. It is the technology by

which sounds, words, phrases and sentences spoken by humans are converted into electrical signals, and these signals are transformed into coding patterns to which meaning has been assigned. Efforts have been made to speak a word or phrase into a microphone, then the electrical signal from the microphone is digitized by an "analog to digital (A/D) converter" and is stored in memory. Here the spoken words are considered as an input to a computer program. This technology will definitely eliminate peripherals like keyboard and mouse from computer system.

v. Quantum computing

It is the area of study focussed on developing computer technology based on the principles of quantum theory, which explains the nature and behaviour of energy and matter on the quantum (atomic and subatomic) level. Development of a quantum computer would mark a leap forward in computing capability far greater than that from the Abacus to a modern day super computer, with performance gains in the billion fold realm and beyond. The quantum computer, following the laws of quantum physics, would gain enormous processing power through the ability to be in multiple states, and to perform tasks using all possible permutations simultaneously. The concept and an approach to quantum computing is still under research and development.



Fig. 30 : New route to large scale Quantum computing



Fig. 31 : Single-Atom writer a landmark for quantum computing

vi. *Nanotechnology*

Nanotechnology refers to the engineering of functional systems at the molecular scale. It is the projected ability or technique to construct/make complete high performance very small products. The molecular scale nanotechnology is considered as the fourth generation of nanotechnology from 2010 to 2020. It is based on molecular devices by design and atomic design. The program is still under research and development.

vii. Applications of Nanotechnology

• Scientists are trying to build machines on the scale of molecules. For instance, a few nanometre wide

motors, robot arms and a complete computer far smaller than a cell.

• A computer using nanotechnology can make copies of data files – essentially as many copies as we want at little or no cost.

viii. Natural language

Natural language is defined as any human language. Example: English, French, Chinese, Hindi etc. Scientists are trying to replace programming languages like FORTRAN, BASIC, C, C++, Java with natural language.

VII. Conclusion

This paper describes the need and emergence of a machine like computer. Efforts have been made to describe the different stages of development of computer right from since time immemorial to 2012 and beyond. With the passage of time man has witnessed different forms of computer with much more improved capability. Development of computer has witnessed major technological changes and more sophisticated techniques have been employed to present a much better computer than the past. This paper also laid emphasis on the role played by the major contributors in the development of a more advanced, sophisticated and portable machine.

VIII. Acknowledgement

I express my deep gratitude to people around me who most often provide me the spark and energy to continue the research work. I would like to thank my mother who provides me generous and invaluable support to undertake and complete this noble task. At last I would like to thank the great almighty who has given wisdom, strength and knowledge to visualise and explore things from root level and put on paper for the benefit of mankind.

References Références Referencias

- 1. http://computer history
- 2. www.History :the five generations of computer
- 3. Backgrounder Press release on the computer history Museum
- 4. "Company facts " http://www.intel.com/content
- Models of natural language and understanding. Proceedings of the National Academy of sciences of the United States of America, vol 92 Nov 22(oct 24, 1995), pp-9977—9982.
- 6. Alan Turing: Computing machinery and intelligent mind 1950
- 7. Nanotechnology Information centre: Properties, Applications, and research and safety guidelines American Elements. http://www.americanelements. com/ nanotech.htm



GLOBAL JOURNAL OF COMPUTER SCIENCE AND TECHNOLOGY INTERDISCIPLINARY Volume 12 Issue 11 Version 1.0 Year 2012 Type: Double Blind Peer Reviewed International Research Journal Publisher: Global Journals Inc. (USA) Online ISSN: 0975-4172 & Print ISSN: 0975-4350

Multiclass Classification and Support Vector Machine

By Yashima Ahuja & Sumit Kumar Yadav

Lovely Professional University, Jalandhar (Punjab) India

Abstract - In this paper we have studied the concept and need of Multiclass classification in scientific research. Various classification approaches are discussed in brief. Support Vector Machines (SVM) has well known record in Binary Classification. Our major emphasis in this paper is to study the fitness of Support Vector Machines in multiclass classification.

GJCST-E Classification: G.4, C.1.2



Strictly as per the compliance and regulations of:



© 2012. Yashima Ahuja & Sumit Kumar Yadav. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License http://creativecommons.org/licenses/by-nc/3.0/), permitting all non-commercial use, distribution, and reproduction inany medium, provided the original work is properly cited.

Multiclass Classification and Support Vector Machine

Yashima Ahuja^a & Sumit Kumar Yadav^o

Abstract - In this paper we have studied the concept and need of Multiclass classification in scientific research. Various classification approaches are discussed in brief. Support Vector Machines (SVM) has well known record in Binary Classification. Our major emphasis in this paper is to study the fitness of Support Vector Machines in multiclass classification.

I. INTRODUCTION

Miliclass classification is a major requirement in field of science and engineering because multiclass discrimination of objects is a serious problem in science and engineering. Multiclass classification is always considered complex than binary classification. In binary classification, only the decision boundaries of 1 class are to be known and rest (complement of first class) is considered as second class where as in multiclass classification, several boundaries are essential for that reason. This may lead to increase the probability of error because of constructions of many decision boundaries. Various classification methods like decision tree, KNN (knearest) are widely used for multiclass classification.

In this paper, our goal is to investigate the problem of multiclass classification and to propose an efficient method for the purpose. Support vector machines are highly accurate and able to model complex non-linear decision boundaries. The Major limitations of SVM are time complexity is very high. It leads to low-speed solutions and Svm are well known for binary classification.

To address the problem of multiclass classification, researchers have used 3 methods-

- 1. One vs one
- 2. One vs all
- 3. Directed acyclic graph

After analyzing the literature, we have found that DAG-SVM is considered to be best for multiclass classification.

II. MOTIVATION

Multiclass problem can be expressed and solved as a single optimization problem, the following models proposed in the works by Suykens and Vandewalle, Szedmak et al. and Oladunni & Trafalis were suggested.

Suykens and Vandewalle proposed a least square multi-support vector machine (LS-MSVM) for multi-category problems that can be interpreted as regularized least squares. It leads to a straightforward and rapid algorithm for generating linear or non-linear classifiers, obtained by solving a single linear system of equations. The approach also has alike interpretations as the reduced kernel multi-class machine. The drawback with LS-SVM is that sparseness is lost i.e. most of support vector becomes non-zero [13].

Szedmak et al. proposed a multiclass model for large sample sizes and number of features. In their formulation, the OAA framework is used, minimizing the L, norm of the normal vector w of the separating hyper planes. Their formulation solves k SVM optimization problems simultaneously and since there are no interactions between the variables of the k SVM problems, their method- which essentially is the OAA but considers all data at once produces the same solution as the separated k SVM problems with the L_1 norm in the objective function. Because their formulation considers all data at once, creating a large scale optimization problem, the size of the problem can be drawback if it gets too large [14].

In addition, Oladunni & Trafalis projected a regularized kernel multi-classification model by means of a reduced kernel approach. The resulting optimization problem solves for k(k-1)/2 classifiers concurrently, and as there are no relations between the variables of the k(k-1)/2 classification problems, the method can be considered a pair wise multiclass classification method that considers all data at one time. The formulation produces the similar solution as that of the independently solved k(k-1)/2 binary classification problems. The method works well, however just like the SVM variant of Szedmak et al, the size of the problem can be a drawback. Consideration of all the data at once transforms the problem into a large scale optimization problem which can be very expensive to compute. Also, sparseness is lost [15].

The objective of this study is aimed towards the formulation of a piecewise kernel based multi-class model. The resulting optimization problem is linear programming problem with a linear cost function and

Author α : Research Scholar, Lovely Professional University, Jalandhar (Punjab) India. E-mail : er.yashima@yahoo.com

Author σ : Assistant Professor, Lovely Professional University, Jalandhar (Punjab) India.

linear constraints in dual space induced by a kernel function.

III. SUPPORT VECTOR MACHINE

Machine Learning is ability to enable the computer to learn. It uses algorithm and techniques which perform different tasks and activities to provide efficient learning [3]. Our main problem is that how can we represent complex patterns and how to exclude bogus patterns. Support Vector Machine is a machine learning tool used for classification and regression. Support Vector Machine is based on supervised learning which classifies points to one of two disjoint half-spaces [2]. It uses nonlinear mapping to convert the original data into higher dimension. Its objective is to construct a function which will correctly predict the class to which the new point belongs and the old points belong. With an appropriate nonlinear mapping, two data sets can always be divided by hyperplane. Hyperplane separates the tuples of one class from another and defines decision boundary. There are many hyper planes that separate the data but only one will achieve maximum separation. The main reason behind maximum margin or separation because if we use a decision boundary to classify, it may end up nearer to one set of datasets compared to others [12]. This was the case when data is linear but mostly we find data is non-linear and data set is inseparable then we use kernels.

The core purpose of SVM is to separate the data with decision boundary and extends it to non-linear boundaries using kernel trick [12]. Major benefit of Svm is versatile means different Kernel functions can be specified for the decision function. General kernels are provided, but it is also possible to specify custom kernels. SVM becomes prominent when we used pixel maps as input; it gives accuracy equivalent to neural networks with elaborated features in a handwriting recognition task. Support vector machine is used for many applications such as text categorization, pattern recognition, face recognition, handwriting analysis but especially for classification and regression applications. Neural Networks are easier to apply than support vector machine but sometimes it provides insufficient results. Even the perceptron learning algorithms (e.g. gradient descent) are slower than SVM learning. Svm has been found to be unbeaten when used for pattern classification problems. One of the major challenge is that of choosing a suitable kernel for given application [12]. But there are many standard or default choices such as Gaussian or polynomial kernel but if these prove worthless then more elaborate kernels are needed.

Traditional Classification approaches perform weakly when working directly because of high dimensionality of data but support vector machine can avoid the pitfalls of very high dimensionality representations. Support vector machine is the most promising technique and approach as compared to others. Support vector machine scales fairly well to high dimensional data and the trade-off between classifier complexity and error can be controlled explicitly. Another benefit of SVMs and kernel methods is that one can design and use a kernel for a particular problem that could be applied directly to the data without the need for a feature extraction process. It is particularly important in problems where a lot of structure of the data is lost by the feature extraction process. Example is text processing. Limitations of Svm are speed, size both in training and testing [8]. Discrete data presents another problem. Most severe difficulty with SVMs is the high algorithmic complexity and extensive memory requirements. In short we can say that the development of SVM is an utterly different from standard algorithms used for learning and SVM provides a fresh insight into this learning.

IV. BINARY CLASSIFICATION USING SVM

For binary classification problems, the idea behind SVM is to split the data in finest method. Binary classification is used when we need to classify the two data sets. There are numerous examples of Binary classification like try-outs (one either makes or fails to make the team), claim size (large claims are above some threshold and small claims below), and fingerprint identification (matched or unmatched). Support vector machines are primarily designed for 2-class classification problems [2].

Support Vector Machine consider 2 approaches-

- 1. Case when the data are linearly separable
- 2. Case when the data are non-linearly separable

NON-LINEAR AND LINEAR SEPARATION



Non-Linearly

Linearly separable

Let us consider first case; there are many linear decision boundaries that divide the data. But only one of these achieves maximum division. The main purpose we need it is because if we use a decision boundary to classify, it may end up nearer to one set of datasets compared to others and we do not want this to happen and thus concept of maximum margin classifier or hyper plane as an apparent solution. Support vectors are the data points that lie closest to the decision surface. Support Vectors can be described as those data points that the margins pushes up against. They are the most difficult to classify [5]. The major problem here is to find the only optimal margin of the separating hyperplane $W^T x + b = 0$, the one that provides maximum margin between the classes. This margin guaranties the lowest rate of misclassification. The further advantage of margin would be avoiding local minima and better classification [12].

DIAGRAM SMALL			
DIAGRAINI SIMALL	AND LANGE	MANGIN	SEFARATION



To allow some flexibility in separating decision boundaries, SVM models have a cost parameter C that controls the tradeoff between allowing training errors and forcing strict margins. It creates a soft margin that permits some misclassifications.

Now, in second case data are not linearly separable i.e. in such cases no straight line can be found that would divide the classes. Linear svm's can be extended to generate nonlinear SVM'S for classification of linearly inseparable data. Such svm are capable of finding nonlinear decision boundaries.

V. MULTICLASS CLASSIFICATION

SVMs were mainly proposed to deal with binary classification but in today's life, we mostly have huge amount of data which we want to classify. Time series data represent quantities or trace the values taken by a variable over a period such as a month, year etc. Examples are stock market, price indexing etc. In this there will be more than two classes. So this creates the need of multiclass classification. Multiclass classification means classification with more than two classes.

Before introducing SVM, we have different kinds of multiclass techniques [9]. Firstly we will distinguish it on the basis of direct and indirect approach (via binary). Direct Approaches includes k-nearest neighbor, decision tree and bayes classification, linear classifications like perceptron. Multiclass classifications through binary include One-vs-one and One-vs-all, Directed acyclic graph svm, Error correcting output codes. Nearest Neighbor classifiers are based on closeness. When given an unknown tuple, a k-nearest neighbor classifier searches the pattern space for the k training tuples that are closest to the unfamiliar tuple. The k training tuples are the k "nearest neighbors" of the unknown tuple [7]. Closeness is defined in terms of a distance metric such as Euclidean Distance [7]. Nearest Neighbor classifiers can be extremely slow when classifying test tuples [7]. It suffers from poor accuracy when given noisy or irrelevant attributes. Euclidean Distance can be calculated by -

$$d(X,Y) = \sqrt{\sum_{i=1}^{n} (x_i - y_i)^2}$$

Decision Tree is a flowchart like structure where each internal node denotes a test on an attribute, every branch represents as a result of the test and each leaf node holds a class label. The topmost node in a tree is the root node. In classification, attribute values of the tuple are tested against the decision tree. Decision Trees can be easily converted into classification rules. Decision trees are popular because it doesn't require any domain knowledge, parameter setting and can handle multidimensional data with fast speed and good accuracy [1].

Bayes classification predicts class membership probabilities such as probability that a given tuple belongs to a particular class. It is based on bayes theorem. Bayes theorem provides a way of calculating posterior probability P(H / X) of H conditioned on X.

P(H / X) = P(X / H)P(H) / P(X)

Bayesian classifiers have the minimum error rate in comparison to all other classifiers but in practice this is not always the case sometimes inaccuracies in assumptions such as lack of available probability data [1].

Now let us consider the case Multiclass classification using Binary. In SVM, The idea of using a hyperplane to separate the data into two groups sounds well when there are only two target categories, but how does SVM handle case where the target variable has more than two categories or values? Numerous approaches have been suggested, but there are two most popular approaches described below [11].

In general, the most frequent method has been to construct one-versus-rest classifiers (usually referred to as ``one-versus-all" or OVA classification) where each category is split out and all of the other categories are merged and to choose the class which classifies the test data with greatest margin. It divides an m class problem into m binary problems. The learning step of the classifiers is done by the whole training data, considering the patterns from the particular class as positives and all other examples as negatives [3].

In validation phase, a pattern is presented to each one of the binary classifiers and then classifier which provides a positive output indicates the output class. In numerous cases, the positive outcome is not unique and some tie-breaking techniques are compulsory. The most familiar approach uses the confidence of the classifiers to decide the last outcome, predicting the class from the classifier with the maximum confidence. Rather than having a score matrix, when dealing with the outcomes of OVA classifiers (where r_i in [0, 1] is the confidence for class i) a score vector is used:

$$R = \left(r_1, r_{2, \dots, r_{i, \dots, r_m}} r_m\right)$$

Another strategy is to construct a set of oneversus-one classifiers by dividing an m class problem into m(m-1)/2 binary problems. Each problem comes up by a binary classifier which is responsible of distinguishing between a different pair of classes. The learning phase of the classifiers is done using as training data only a subset of instances from the original data-set which contain any of the two corresponding class labels, while the instances with dissimilar class labels are simply ignored [3].

In validation phase, a pattern is presented to each one of the binary classifiers. The output of a classifier given by r_{ij} in [0, 1] is the confidence of the

binary classifier discriminating classes i and j in favor of the former class. Class with the largest confidence is the output class of a classifier. These outputs are represented by a score matrix R:

$$\mathbf{R} = \begin{pmatrix} - & r_{12} & \cdots & r_{1m} \\ r_{21} & - & \cdots & r_{2m} \\ \vdots & & & \vdots \\ r_{m1} & r_{m2} & \cdots & - \end{pmatrix}$$

There is so much difference between these two approaches. One-vs-all strategy constructs by fitting one classifier per class where as one-vs-one strategy constructs one classifier per pair of classes. Benefit of one-vs-all approach is its interpretability. This is the most commonly used strategy and is a fair default option. One-vs-one classifier doesn't scale well with n samples.

Directed Acyclic Graph can be used to represent a set of programs where the input, output, or execution of one or more programs is dependent on one or more other programs. The programs are nodes in the graph, and the edges (arcs) identify the dependencies [5]. A directed acyclic graph is a directed graph that contains no cycles.



VI. Conclusion

In today's era, SVM are majorly used in binary class classification. In real time data, it is commonly found that data is to be classified in more than two classes. KNN, Decision Tree, Bayesian Classification are widely used for multiclass classification. KNN are lazy learners and hence perform slowly. Decision Trees are good for the purpose but highly complex if the depth of tree is on higher side. Bayesian Classifiers need good sample of data with high probable states, which is not always possible. In SVM, The idea of using a hyperplane to separate the data into two groups sounds well when there are only two target categories. For Multiclass Classification, One-vs-all strategy constructs by fitting one classifier per class where as one-vs-one strategy constructs one classifier per pair of classes. Benefit of one-vs-all approach is its interpretability. This is the most commonly used strategy and is a fair default option. One-vs-one classifier doesn't scale well with n samples.

References Références Referencias

- 1. Data Mining Concepts and Techniques book By Jiawei Han and Micheline Kamber
- 2. Wiki Svm, http://www.dataminingtools.net/ wiki/ svm.php
- 3. http://www.dataminingtools.net/wiki/introml.php
- 4. http://sci2s.ugr.es/ovo-ova/
- 5. http://www.dtreg.com/svm.htm
- 6. http://research.cs.wisc.edu/condor/manual/v6.1/2_1 1Inter_job_Dependencies.html
- 7. http://alitarhini.wordpress.com/2011/02/26/parallelk-nearest-neighbor/
- 8. http://www.svms.org/disadvantages.html
- 9. http://www.cs.berkeley.edu/~pliang/cs294-spring 08/lectures/multiclass/slides.ppt
- Olutayo O. Oladunni and Gaurav Singhal, "Piecewise Multi-Classification Support Vector Machines", Proceedings of International Joint Conference on Neural Networks, Atlanta, Georgia, USA, June 14-19, 2009
- Chih-Wei Hsu and Chih-Jen Lin, "A Comparison of Methods for Multiclass Support Vector Machines", IEEE Transactions on Neural Networks, Vol. 13, No. 2, March 2002
- 12. Laura Auria , Rouslan A. Moro, "Support Vector Machines (SVM) as a Technique for Solvency Analysis"

2012

- 13. J.AK. Suykens and J. Vandewalle, "Multiclass least squares support vector machine classifiers," in Proceedings. of Joint Coif. On Neural Networks (IJCNN'99), Washington, D.C., 1999c.
- 14. S. Szedmak, J. Shawe-Taylor, C.J. Saunders, and D.R. Hardoon, "Multiclass classification by L1 norm support vector machine," in Pattern Recognition and Machine Learning in Computer Vision Workshop, Grenoble, France, May 02-04, 2004.
- 15. 0 .0. Oladunni and T B. Trafalis, "A pair wise reduced kernel-based multi-classification Tikhonov regularization machine ," in Proceedings of the International Joint Conference on Neural Networks (IJCNN '06), IEEE Press, pp. 130 - 137, Vancouver, BC, Canada, July 2006, on CD-ROM.

This page is intentionally left blank



GLOBAL JOURNAL OF COMPUTER SCIENCE AND TECHNOLOGY INTERDISCIPLINARY Volume 12 Issue 11 Version 1.0 Year 2012 Type: Double Blind Peer Reviewed International Research Journal Publisher: Global Journals Inc. (USA) Online ISSN: 0975-4172 & Print ISSN: 0975-4350

Optimized Round Robin CPU Scheduling Algorithm

By Sukumar Babu B., Neelima Priyanka N. & Dr. P. Suresh Varma

Vijaya Institute of Technology for Women, JNTUK, Vijayawada, India

Abstract - One of the fundamental function of an operating system is scheduling. There are 2 types of uni-processor operating system in general. Those are uni-programming and multi-programming. Uniprogramming operating system execute only single job at a time while multiprogramming operating system is capable of executing multiple jobs concurrently. Resource utilization is the basic aim of multiprogramming operating system. There are many scheduling algorithms available for multiprogramming operating system. But our work focuses on design and development aspect of new and novel scheduling algorithm for multi-programming operating system in the view of optimization. We developed a tool which gives output in the form of experimental results with respect to some standard and new scheduling algorithms e.g. First come first serve, shortest job first, round robin, optimal and a novel cpu scheduling algorithm etc.

Keywords : operating system, uni-processor, uni programming, multi-programming, resource utilization, scheduling, fcfs, sjf, priority, round robin, a novel CPU scheduling algorithm etc.

GJCST-E Classification: D.4.1



Strictly as per the compliance and regulations of:



© 2012. Sukumar Babu B., Neelima Priyanka N. & Dr. P. Suresh Varma. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License http://creativecommons.org/licenses/by-nc/3.0/), permitting all non-commercial use, distribution, and reproduction inany medium, provided the original work is properly cited.

Optimized Round Robin CPU Scheduling Algorithm

Sukumar Babu B.^a, Neelima Priyanka N.^o & Dr. P. Suresh Varma^P

Abstract - One of the fundamental function of an operating system is scheduling. There are 2 types of uni-processor operating system in general. Those are uni-programming and multi-programming. Uni-programming operating system execute only single job at a time while multiprogramming operating system is capable of executing multiple jobs concurrently. Resource utilization is the basic aim of multiprogramming operating system. There are many scheduling algorithms available for multi-programming operating system. But our work focuses on design and development aspect of new and novel scheduling algorithm for multi-programming operating system in the view of optimization. We developed a tool which gives output in the form of experimental results with respect to some standard and new scheduling algorithms e.g. First come first serve, shortest job first, round robin, optimal and a novel cpu scheduling algorithm etc.

Keywords : operating system, uni-processor, uni programming, multi-programming, resource utilization, scheduling, fcfs, sjf, priority, round robin, a novel CPU scheduling algorithm etc.

I. INTRODUCTION

cheduling is the heart of any computer system since it contain decision of giving resources between possible processes. Sharing of computer resources between multiple processes is also called as scheduling. The CPU is one of the primary computer resources, so its scheduling is essential to an operating system's design[1]. Efficient resource utilization is achieved by sharing system resources amongst multiple users and system processes[2]. Optimum resource sharing depends on the efficient scheduling of competing users and system processes for the processor, which renders process scheduling an important aspect of a multiprogramming operating system. As the processor is the most important resource, process scheduling, which is called CPU scheduling, becomes all the more important in achieving the above mentioned objectives[1]. Part of the reason for using multiprogramming is that the operating system itself is implemented as one or more processes, so there must be a way for the operating system and application processes to share the CPU. Another main reason is the need for processes to perform I/O

Author σ : SRK Institute of Technology, JNTUK, Vijayawada.

operations in the normal course of computation. Since I/O operations ordinarily require orders of magnitude more time to complete than do CPU instructions, multiprograming systems allocate the CPU to another process whenever a process invokes an I/O operation[3].

- a) Goals for Scheduling
- Utilization/Efficiency: keep the CPU busy 100% of the time with useful work
- Throughput: maximize the number of jobs processed per hour.
- Turnaround time: from the time of submission to the time of completion, minimize the time batch users must wait for output
- Waiting time: Sum of times spent in ready queue -Minimize this
- Response Time: time from submission till the first response is produced, minimize response time for interactive users
- Fairness: make sure each process gets a fair share of the CPU.

b) Sheduling Algorithmms

We will start with five commonly used scheduling algorithms [1,2,4,5]

i. First Come First Served Scheduling Algorithm (FCFS)

FCFS is the simplest scheduling algorithm. For this algorithm the ready queue is maintained as a FIFO queue. PCB (Process Control Block) of a process submitted to the system is linked to the tail of the queue. The algorithm dispatches processes from the head of the ready queue for execution by the CPU. When a process has completed its task it terminates and is deleted from the system. The next process is then dispatched from the head of the ready queue.

ii. Shortest Job First Scheduling Algorithm (SJF)

For this algorithm the ready queue is maintained in order of CPU burst length, with the shortest burst length at the head of the queue. A PCB of a process submitted to the system is linked to the queue in accordance with its CPU burst length. The algorithm dispatches processes from the head of the ready queue for execution by the CPU. When a process has completed its task it terminates and is deleted from the system. The next process is then dispatched from the head of the ready queue.

Author α : Vijaya Institute of Technology for Women, JNTUK, Vijayawada, India.

Author ρ : University College, Adikavi Nannaya University, Rajahmundry, India.

iii. Priority Based Scheduling

In this algorithm, priority is associated with each process and on the basis of that priority CPU is allocated to the processes. Higher priority processes are executed first and lower priority processes are executed at the end. If multiple processes having the same priorities are ready to execute, control of CPU is assigned to these processes on the basis of FCFS [1]. Priority Scheduling can be preemptive and nonpreemptive in nature.

iv. Round Robin Scheduling Algorithm (RR)

For this algorithm the ready queue is maintained as a FIFO queue. A PCB of a process submitted to the system is linked to the tail of the queue. The algorithm dispatches processes from the head of the ready queue for execution by the CPU. Processes being executed are preempted on expiry of a time quantum, which is a system defined variable. A preempted process's PCB is linked to the tail of the ready queue. When a process has completed its task, i.e. before the expiry of the time quantum, it terminates and is deleted from the system. The next process is then dispatched from the head of the ready queue.

II. PROPOSED WORK : COMPARISION BETWEEN TWO NEW ALGORITHMS

In the proposed work we mainly concentrated on the new two algorithms called A Novel CPU Scheduling Algorithm – Preemptive & Non Preemptive [6], and Efficient CPU Scheduling Algorithm [7], these two algoritims are compared each other along with the existing algorithms like FCFS, SJF, Priority, Round Robin.

a) Work Procedure of A Novel CPU Scheduling Algorithm – Preemptive

The proposed algorithm A Novel CPU Scheduling algorithm is both preemptive and non-preemptive in nature. In this algorithm a new factor called condition factor(F) is calculated by the addition of burst time and arrival time ie., F = Burst Time + Arrival Time.

This factor f is assigned to each process and on the basis of this factor process are arranged in ascending order in the ready queue. Process having shortest condition factor (F) are executed first and process with next shortest factor (F) value is executed next. By considering the arrival time the new algorithms acts as preemptive or non-preemptive.

Proposed CPU scheduling algorithm reduces waiting time, turnaround time and response time and also increases CPU utilization and throughput.

The working procedure of *A Novel Preemptive Scheduling of Preemptive and Non Preemptive* algorithm is as given below:

- Take the list of processes, their burst time and arrival time.
- ✓ Find the condition factor F by adding arrival time and burst time of processes.
- ✓ First arrange the processes, burst time, condition factor based on arrival time ascending order.
- ✓ Iterate step a, b until burst time becomes zero.
- a. If arrival time of first and second process are equal the arrange them based on their condition factor f.
- b. Decrement the burst time and increment arrival time by 1
- When burst time becomes find the waiting time and turnaround time of that process.
- ✓ Average waiting time is calculated by dividing total waiting time with total number of processes.
- Average turnaround time is calculated by dividing total turnaround time by total number of processes.
 [6].
- b) Work Procedure of Efficient CPU Scheduling Algorithm

The proposed algorithm ERR is pre-emptive in nature. In this algorithm all the processes are sorted in ascending order in the ready queue. ERR scheduling algorithm maintains a small unit of time called time quantum or time slice is assigned to each process. According to that time quantum processes are executed and if time quantum of any process expires before its complete execution, it is put at the end of the ready queue and control of the CPU is assigned to the next shortest incoming process. In this algorithm ready queue is a circular queue. New processes are added to the tail of the ready queue. The CPU scheduler picks the first process from the ready queue sets of timer to interrupt after assigned time quantum, and dispatches the process.

The average waiting time and average turnaround time obtained from ERR is better than existing CPU scheduling algorithms.

ERR is fair in scheduling and effective in time sharing environment. In ERR scheduling, CPU is given to each process for equal time period, no process has to wait for long time for the CPU.

Working Procedure of the Proposed Algorithm ERR is discussed below:

- First collect all the list of processes, their burst time, arrival time and time quantum.
- Arrange processes and their burst time in ascending order based on their arrival time.
- Repeat 1 and 2 until all process complete their execution
- 1. If the current time is equal to arrival time of the ready queue process And if burst time of current process is greater than time slice then execute for time slice period else execute for burst time period.

- 2. If current time equals to arrival time and burst time equals to zero, then remove the process from the ready queue.
- During above process calculate the waiting time and turnaround time of each process. [7].

III. Performance Comparison Between Existing and New Algorithms

The simulation provides an interactive GUI interface to the user through which a user can input data related to different processes then applying different algorithms based on the algorithm choices given in the simulator. The simulator employs JAVA swings.

The front end user interfaces are developed using java awt's and swings. The parent screen allows the user to give number of processes to be in execution.

iewer: Scheduling	
Ente Number Of Process	Click
This is Class Process	Data
4	
	iewer: Scheduling Ente Humber Of Process This is Class Process

Screen1 : Enter Number of Process

Screen 2 allows the use give the details of the processes like Burst time, Arrival Time, Priority and Time slice.

Example1 : time slice=1

Applet					
		ess 4		Click	
Process Number	Burst Time	5	Arrival Time	Priority	
Enter Process - 0	02		04	06	
Enter Process - 1	04		01	02	
Enter Process - 2	06		02	04	
Enter Process - 3	01		03	05	
Select Algorithm-1		Select Algorithm-2			
Enter Time Slice			1		~
Compare Any Tw	0		Compare All		

Screen 2: Enter Burst , Arrival and Priority of processes

Screen 3 allows the user to compare any two algorithms of his choice or allows the user to compare all algorithms.

manual viewer:	scheuung				
Applet					
		ess 4		Click	
Process Number	Burst Time		Arrival Time	Priority	
Enter Process - 0	02		04	06	
Enter Process - 1	04		01	02	
Enter Process - 2	06		02	04	
Enter Process - 3	01		03	05	
Select Algorithm-1		Select Algorithm-2			
Select Algorithm-1			1		
FCFS			Compare All		
NON PREEMPTIVE S	JF RIORITY				
PREEMPTIVE SJF					
PREEMPTIVE PRIOR	ITY				
ROUND ROBIN					
ERR					

Screen 3: Selection of Algorithm1 and Algorithm2

Screen 4 shows the GUI comparison results of the all algorithms.



Screen4: Example1 Comparission of all Algorithms

Screen 5 shows the CUI comparison results of the all algorithms.

C:\WINDOWS\system32\c	md.exe	- appletview	er Scheduling. java
D:\sukumar\nev sukumar	\ERR\n	ew>javac S	cheduling.java
D:\sukumar\new sukumar	ERR\n	ew>appletv	iewer Scheduling.ja
Compare All Algorithms			
Algorithm Name	Avg	Waiting	Avg Turn Around
FCFS	ania ania ania ania dia dia adii 1	4.7	8.0
NON PREEMPTIVE SJF		2.5	5.7
NON PREEMPTIVE PRIORIT	<u>Y</u>	4.7	8.0
NON PREEMPTIVE COMBINA	TORY	3.2	6.5
PREEMPTIVE SJF		2.2	5.5
PREEMPTIVE PRIORITY		4.7	8.0
ROUND ROBIN		3.5	6.7
ERR		2.2	5.5
PREEMPTIVE COMBINATORY		2.2	5.5
-			

Screen 5: Example1 CUI Comparision of all algorithms

Screen6 shows the GUI comparison between all algorithms when time slice=2



Screen6 : Example1 Comparing all algorithms when when time slice=?

Compare All Algorithm	S				
Algorithm Name	Âvg	Waiting	Avg	Turn	Around
FCFS		4.7		8	.0
NON PREEMPTIVE SIF		2.5		5	.7

Screen7 shows the CUI comparison between all . 12

Algorithm Name	Avg Waiting	Avg Turn Around
FCFS	4.7	8.0
NON PREEMPTIVE SJF	2.5	5.7
NON PREEMPTIVE PRIORI	TY 4.7	8.0
NON PREEMPTIVE COMBIN	ATORY 3.2	6.5
PREEMPTIVE SJF	2.2	5.5
PREEMPTIVE PRIORITY	4.7	8.0
ROUND ROBIN	3.5	6.7
ERR	2.0	5.2
PREEMPTIVE COMBINATOR	Y 2.2	5.5

screen7: CUI Comparision of all algorithms when ts=2

Example 2 : Screen 8 takes different processes burst time and arrival time and priority values

		ess 5	Click
Process Number	Burst Time	Arrival Time	Priority
Enter Process - 0	10	0	3
Enter Process - 1	1	1	1
Enter Process - 2	2	2	3
Enter Process - 3	1	3	4
Enter Process - 4	5	4	2
Select Algorithm-1		Select Algorithm	2
Enter Time Slice		2	
🔾 Compare Any Tw	0	🔘 Compare All	

Screen8: Entering Process Details : Burst, Arrival time and Priority

Screen9 shows the GUI comparison between all algorithms



Screen9: Example2 GUI Comparision

Screen10 shows the GUI comparison between all algorithms

Algorithm Name	Avg Waiting	Avg Turn Around
FCFS	7.6	11.4
NON PREEMPTIVE SJF	7.4	11.2
NON PREEMPTIVE PRIORITY	9.0	12.8
NON PREEMPTIVE COMBINATO	3.4	7.2
PREEMPTIVE SJF	2.2	6.0
PREEMPTIVE PRIORITY	6.0	9.8
ROUND ROBIN	3.2	7.0
ERR	2.2	6.0
PREEMPTIVE COMBINATORY	2.2	6.0

screen10: Example2 CUI Comparision

IV. CONCLUSION

This paper mainly defines the existing algorithms and two new algorithms called A Novel CPU Scheduling Algorithm Preemptive & Non Preemptive and Efficient CPU Scheduling Algorithm. These two algorithms are compared with each other and also compared with the existing algorithms. From Example1 and Example2 it is clear that Efficient Round Robin Algorithm gives best and optimized average waiting time and average turnaround time when compared with the remaining algorithms. When the time-slice / time quantum is increasing Efficient Round Robin Algorithms gives the best average waiting and average turnaround time.

References Références Referencias

1. Hybrid Scheduling and Dual Queue Scheduling Syed Nasir Shah, Ahmad Mahmood, Alan Oxley 2009-IEEE 978-1-4244-4520-2/09 Conference.
- 2. Operating System concepts 7th Edition, By Galvin, Silberschatz, Gange John Wiley & Sons, 2005
- 3. http://www1bpt.bridgeport.edu/sed/projects/cs503/ Spring_2001/kode/os/scheduling.htm
- Milan Milenkovic, "Operting System Concepts and Design", Second Edition McGraw Hill International, 1992
- 5. Leland L. Beck, "System Software", 3rd Ed., Addison Wesley, 1997
- A Novel CPU Scheduling Algorithm Preemptive & Non Preemptive, International Journal of Modern Engineering Research, Volume2 Issue 6.
- 7. Efficient Round Robin CPU Scheduling Algorithm, International Journal of Engineering Research and Development, Paper id: 16193.

This page is intentionally left blank



GLOBAL JOURNAL OF COMPUTER SCIENCE AND TECHNOLOGY INTERDISCIPLINARY Volume 12 Issue 11 Version 1.0 Year 2012 Type: Double Blind Peer Reviewed International Research Journal Publisher: Global Journals Inc. (USA) Online ISSN: 0975-4172 & Print ISSN: 0975-4350

Analysis of E-Governance Status and Future of E-Governance in Punjab

By Jaspreet Kaur & Dr. Vijay Singh Rathore

Baba Farid Group of Institutions, Bathinda (Punjab), India

Abstract - The e-Governance (digital government or online government) refers to government's use of information technology to exchange information and services with citizens, businesses, and other arms of government. E-Governance is a process of reform in the way Governments work, share information, engage citizens and deliver services to external and internal clients for the benefit of both government and the clients that they serve. This paper studies the current status of e-governance and future of e-governance in Punjab.

Keywords : E-Governance, IT, MMP. GJCST-E Classification: J.1



Strictly as per the compliance and regulations of:



© 2012. Jaspreet Kaur & Dr. Vijay Singh Rathore. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License http://creativecommons.org/licenses/by-nc/3.0/), permitting all non-commercial use, distribution, and reproduction inany medium, provided the original work is properly cited.

Analysis of E-Governance Status and Future of E-Governance in Punjab

Jaspreet Kaur^a & Dr. Vijay Singh Rathore^o

Abstract - The e-Governance (digital government or online government) refers to government's use of information technology to exchange information and services with citizens, businesses, and other arms of government. E-Governance is a process of reform in the way Governments work, share information, engage citizens and deliver services to external and internal clients for the benefit of both government and the clients that they serve. This paper studies the current status of e-governance and future of e-governance in Punjab.

Keywords : E-Governance, IT, MMP.

I. INTRODUCTION

-Governance is a process of reforming the Governments work, share information, engage citizens and deliver services to external and internal clients for the benefit of both government and the clients that they serve. Government shares IT like World Wide Web (WWW), Internet and mobile computing to reach out to citizens to improve delivery of services to citizens [1].

There are many implications of implementing and designing e-governance including impacts on economic, social, and political factors. The Objectives of e-governance is to provide the services to citizens by implementing simple, steady and reliable registration process, by developing consistency in process, by implementing transparency in valuation of properties and automating all the back office functions. The major strengths of the e-government policies are to cover all administrative civic functions, to complete on-line functioning, providing anytime anywhere solution to citizens, to provide user, the internet technology with browser based interfaces, to provide an effective user technology for providing single window solution, to establish a proper workflow across departments, and computerization of municipal corporations [2].

As population in the cities increase in geometric progression, municipalities still have to extend their services to the citizen in an arithmetic progression. Generally, it is always desired to have smart sized corporation with able system in place. The manual system have their limitation and is not sufficient to meet the requirement. In the context of e-governance, many E-government solution providers provide an Information technology based solution to Municipalities to strengthen their services to citizens, which were not possible till now due to limitation of manual functioning [3].

The perspective change is toward citizenoriented computerization rather than only back office computerization of existing system. Various modules were designed to help the citizens, like property taxation, water billing and accounting, various permits and licenses, death and birth registration, health municipal hospitals, scheme monitoring, city engineering function, tendering of projects, accounts, auditing, municipal secretary, General budget, administration & Establishment, legal matters, Citizen Facilitation Centre, Information kiosks, corporate websites etc. [4].

The Department of Information Technology (DIT) has been created in October 1998 by merging the Department of Administrative Reforms, Evaluation Wing Department of General Administration and of Computerization Wing of Department of Planning to steer the State of Punjab in the use of information and communication technology (ICT) as an engine of growth With the understanding that ICTs can act as catalyst and enabler for providing real and good governance to all entities, the Department has been promoting innovative and effective use of technology for percolation of benefits of Good Governance to all the strata of society. The functions allocated to DIT under the Allocation of Business Rules, 1994, are as under:

a) All matters relating to:

(i) Administrative reorganization and streamlining of administration; (ii) Reports of Administration Reforms Commissions; (iii) Improvement in office procedures and systems; (iv) Indian Institute of Public Administration and (v) Formulation of policies regarding maintenance and retention of records.

b) Regarding matters relating to Information Technology (IT):

(i) To formulate policy on the use of Information Technology in the State of Punjab; (ii) To formulate and implement a plan for induction of Information Technology in the Punjab State Administration at all levels, in co-ordination with the concerned Government Departments; and (iii) Give technical advice to all Government Departments regarding, adoption of

Author a : Department of Computer Science Baba Farid Group of Institutions, Bathinda (Punjab), India.

E-mail : dr.preet83farid@rediffmail.com

Author σ : Director of Shree Karni College, Vaishali Nagar, Jaipur-302021.

suitable information Technology Systems and for making appropriate arrangements to maintain the same. As per the orders of the government, the role assigned to the Department of Information Technology is that of a facilitator and the primary responsibility for the implementation, operations, management and use of computer systems, system software, and services rests with the each state Department concerned. The Department is also responsible for developing statewide policies, technical standards and procedures.

II. Defining E-Governance

E-Government means different things for different people. Some simply define it as digital governmental information or a way of engaging in digital transactions with customers. For others e-Government simply consists of the creation of a web site where information about political and governmental issues are presented. These narrow ways of defining and conceptualizing e-Government restrict the range of opportunities it offers. One of the reasons why many e-Government initiatives fail is related to the narrow definition and poor understanding of the e-Government concept, processes and functions. E-Government is a multidimensional and complex concept, which requires a broad definition and understanding, in order to be able to design and implement a successful strategy.

Several dimension and related factors influence the definition of e-Governance. The word "electronic" in the term e-Governance implies technology driven governance. E-Governance is the application of Information and communication Technology (ICT) for deliverina government Services, exchange of information communication transactions, integration various stand-one systems and services between Government-to-citizens (G2C), Government-to-Business (G2B), Government-to-Government(G2G) as well as back office processes and interactions within the entire government frame work.

According to the World Bank [5]:- "E-Government refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions."

Thus, the stress here is on use of information technologies in improving citizen-government

UNESCO defines e-Governance as [6]:-"Governance refers to the exercise of political, economic and administrative authority in the management of a country's affairs, including citizens articulation of their interests and exercise of their legal rights and obligations. E-Governance may be understood as the performance of this governance via the electronic medium in order to facilitate an efficient, speedy and transparent process of disseminating information to the public, and other agencies, and for performing government administration activities." This definition visualizes the use of the electronic medium in the exercise of authority in the management of a country's affairs along with articulation of citizens interests leading to greater transparency and efficiency.

Dr. APJ Abdul Kalam, former President of India, has visualized e-Governance [7] in the Indian context to mean: "A transparent smart e-Governance with seamless access, secure and authentic flow of information crossing the interdepartmental barrier and providing a fair and unbiased service to the citizen."

UNPA & ASPA [8]:- e-Governance is the public sector's use of the most innovative information and communication technologies, like the Internet, to deliver to all citizens improved services, reliable information and greater knowledge in order to facilitate access to the governing process and encourage deeper citizen participation.

Fraga [9]:- e-Government is the transformation of public sector internal and external relationships through net-enabled operations, IT and communications, in order to improve: Government service delivery; Constituency participation; Society.

About Punjab (Land of five rivers) Punjab is located in the northwest of India surrounded by Pakistan on the west, the Indian states of Jammu and Kashmir on the north, Himachal Pradesh on its northeast and Haryana and Rajasthan to its south. It covers a geographical area of 50,362 sq. km which is 1.54 % of country"s total geographical area. Punjab state is located between 29° 30' N to 32° 32' N latitude and between 73° 55' E to 76° 50' E longitude. Its average elevation is 300 m from the sea level. Chandigarh is the capital of the Punjab.

Sikhism is the predominant faith in Punjab. About 60% of the people in the state are Sikhs. The holiest of Sikh shrines, the Sri Harmandir Sahib (or Golden Temple), is in the city of Amritsar. The Sri Akal Takht Sahib which resides within the Golden temple complex is the temporal seat of Sikhs. Of the five Takhts (Temporal Seats of religious authority) of Sikhism, three are in Punjab. These are Sri Akal Takht Sahib, DamdamaSahib and Anandpur Sahib. Anandpur Sahib is where Guru Gobind Singh created the Khalsa in 1699 on the day of Vaisakhi. During major holidays on the Sikh calendar (suchas Vaisakhi, Hola Mohalla, Gurpurb and Diwali), many Sikhs gather and march in religious processions through virtually every city, town and village in Punjab.

According to India Today [10], Leading magazine in India, Punjab has been awarded best overall state since 2003, and has been able to retain the top position every year. It also affords best quality of life to its residents. Punjab has the best infrastructure in all of India [11]. Although it has a huge shortage of electricity due to high demand, all major cities in Punjab benefit from this and have some of the lowest tariffs in India. All of Punjab's villages have been provided electricity and connected to the state electrical power grid since 1974.

The official census 2011 of Punjab has been conducted by Directorate of Census Operations in Punjab[12]. Enumeration of key persons including Chief Minister of Punjab was also done by officials conducting population census. As per details from Census 2011, Punjab has population of 2.77 Crore, an increase from figure of 2.44 Crore in 2001 census. Total population of Punjab as per 2011 census is 27,704,236 of which male and female are 14,634,819 and 13,069,417 respectively. In 2001, total population was 24,358,999 in which males were 12,985,045 while females were 11,373,954. The total population growth in this decade was 13.73 percent while in previous decade it was 19.76 percent. The population of Punjab forms 2.29 percent of India in 2011. In 2001, the figure was 2.37 percent.

DESCRIPTION	RURAL	Urban	
POPULATION (%)	62.51%	37.49%	
Population Growth	7.58%	25.72%	
Sex Ratio	906	872	
AVERAGE LITERACY	72.45%	83.70	

Literacy rate in Punjab has seen upward trend and is 76.68 percent as per 2011 population census. Of that, male literacy stands at 81.48 percent while female literacy is at 71.34 percent. In 2001, literacy rate in Punjab stood at 69.65 percent of which male and female were 79.66 percent and 60.53 percent literate respectively. The majority of the people speak Punjabi and very few can read and speak English in Punjab.

III. About Department of Information Technology

In consonance with the national objective of making India a global IT Power and a front runner in the information revolution, the Government of Punjab set up the Department of Information Systems and Administrative Reforms (DISAR) by merging the Department of Administrative Reforms, Evaluation and the Computerization Wing of the Planning department with effect from 1.11.1998. The new Department of Information Technology (DoIT) has been entrusted with the following responsibilities:

- To formulate the policy on the use of Information Technology in the State.
- To formulate and implement a plan for introduction of Information Technology in the Punjab Administration at all levels, in coordination with the concerned Government Departments.
- To give technical advice to all the Government Departments regarding adoption of suitable information technology systems and for making appropriate arrangements to maintain the same

IV. E-GOVERNANCE PLAN

Over the years, a large number of initiatives have been undertaken by various State Governments and Central Ministries to usher in an era of e-Government. Sustained efforts have been made at multiple levels to improve the delivery of public services and simplify the process of accessing them.

In India, e-Governance has steadily evolved from computerization of Government Departments to initiatives that encapsulate the finer points of Governance, such as citizen centricity, service orientation and transparency. Lessons from previous e-Governance initiatives have played an important role in shaping the progressive e-Governance strategy of the country. Due cognizance has been taken of the notion that to speed up e-Governance implementation across the various arms of Government at National, State, and Local levels, a program approach needs to be adopted, guided by common vision and strategy. This approach has the potential of enabling huge savings in costs through sharing of core and support infrastructure, enabling interoperability through standards, and of presenting a seamless view of Government to citizens.

The National e-Governance Plan (NeGP), takes a holistic view of e-Governance initiatives across the country, integrating them into a collective vision, a shared cause. Around this idea, a massive countrywide infrastructure reaching down to the remotest of villages is evolving, and large-scale digitization of records is taking place to enable easy, reliable access over the internet. The ultimate objective is to bring public services closer home to citizens, as articulated in the Vision Statement of NeGP

V. MISSION MODE PROJECTS

The Government approved the National e-Governance Plan (NeGP) [13], comprising of 27 Mission Mode Projects (10 Central MMPs, 10 State MMPs and 7 Integrated MMPs spanning multiple Ministries/ Departments.) and 8 components, on May 18, 2006. The Government has accorded approval to the vision, approach, strategy, key components, implementation

60 Year 2012

methodology, and management structure for NeGP. However, the approval of NeGP does not constitute financial approval(s) for all the Mission Mode Projects (MMPs) and components under it. The existing or ongoing projects in the MMP category, being implemented by various Central Ministries, States, and State Departments would be suitably augmented and enhanced to align with the objectives of NeGP.

The concerned Ministry/ Department is entirely responsible for all decisions related to their MMPs. However, decisions impacting NeGP as a whole are

taken in consultation with DIT. Additionally, wherever required by the concerned Ministries/ Departments, DIT provides necessary support for project formulation and development.

Every State has the flexibility of identifying up to 5 additional State-specific MMPs (relevant for economic development within the State). In cases where Central Assistance is required, such inclusions are considered on the advice of the concerned Line Ministries/ Departments.

27 Mission Mode Projects (MMPs)

CENTRAL MMPS	STATE MMPS	INTEGRATED MMPS
 BANKING CENTRAL EXCISE & CUSTOMS INCOME TAX (IT) INSURANCE MCA21 NATIONAL CITIZEN DATABASE PASSPORT IMMIGRATION, VISA AND FOREIGNERS REGISTRATION & TRACKING PENSION E-OFFICE 	 Agriculture Commercial Taxes E-District Employment Exchange Land Records Municipalities Gram Panchayats Police Road Transport Treasuries 	 CSC E-Biz E-Courts E-PROCUREMENT EDI FOR E-TRADE NATIONAL E-GOVERNANCE SERVICE DELIVERY GATEWAY INDIA PORTAL

VI. E-GOVERNANCE PROJECTS IN PUNJAB

The Department of Information Technology (DoIT) prepares and executes plans in collaboration with the concerned departments to leverage the power of Information & Communication Technology (ICT) as a vehicle for improved governance and service delivery to the citizens in different departments of the State Government.

MAJOR PROJECTS IN PUNJAB STATE

a) Enabling E-Forms through State Portal & Service Delivery Gateway in the State of Punjab

Project Introduction:

The National e- Governance Plan (NeGP) of the Govt. of India aims to make all Government services accessible to the common man through common service delivery outlets and ensure efficiency, transparency & reliability of such services at affordable costs to realize the basic needs of the common man. Under this plan, a Government of India sponsored Mission Mode Project (MMP) called 'State Portal, State Service Delivery Gateway (SSDG) and Gap Infrastructure' has been entrusted to Punjab State E-Governance Society (PSEGS) for implementation [14]. For this purpose an administrative approval for the project at an estimated total outlay of Rs.1011.66 lakhs was accorded by GOI on 30.3.2009 vide which DIT (GOI) contribution is Rs. 505.83 lakhs and the remaining Rs 505.83 lakhs are to be met through Additional Central Assistance (ACA) for NeGP provisions of Planning Department.

Objectives of the Project:

The objectives of the State Portal & SSDG scheme are to ensure the following:

- Providing easy, anywhere and anytime access to Government Services (both Information & Transactional)
- Reducing number of visits of citizens to a Government office / department for availing the services
- Reducing administrative burden and service fulfillment time & costs for the Government, Citizens & Businesses
- Reducing direct interaction of citizen with the Government and encourage 'e'-interaction and efficient communication through portal
- Enhancing perception & image of the Government and its constituent Departments
- Promotion of uniform web interface across Government departments and to build in synergies with the National Portal of India (NPI) using the National Service Delivery Gateway (NSDG).
- Delivery of services through Common Service Centers (CSCs) by leveraging the common infrastructure (SWAN, SDC etc.) and development of the applications and infrastructure required for deployment of State Portal and State Service Delivery Gateway (SSDG) for the State.
- Publishing the static data and all information of the State departments in line with guidelines for necessary integration with NPI.

Implementation Status and Timelines:

A State Project Committee (SPC), comprising of the following members was constituted for overall project leadership and for overseeing the implementation of project:

- 1. Principal Secretary, Information Technology-Chairman
- 2. Director IT- Member Secretary
- 3. Project Coordinator, DIT, Punjab
- 4. Representative from NIC Punjab
- 5. Nodal Officers of the concerned 8 Departments
- 6. Representatives from DIT, Gol, CDAC as and when required

M/s KPMG, empanelled by DIT, Govt. of India was appointed as Project Consultant by PSEGS and is working on the project since Sept '09 along-with PSEGS. M/s KPMG performed the assessment study of the following eight departments in scope of the project for finalization of departmental services, understanding the process flow and gap infrastructure:

- 1. Agriculture
- 2. Rural Development and Panchayat
- 3. Food and civil supplies
- 4. Health and family welfare
- 5. Social Security
- 6. SC/BC Welfare
- 7. Local Government
- 8. Punjab Police

Further, the Functional Requirement Specifications (FRS) and a Request for Proposal (RFP) based on approved FRS was prepared by the consultants for inviting tenders for selection of Implementation Agency for the project. A closed bidding process was initiated by PSEGS in Nov, 2010 for the selection of Implementation Agency for the project and approved RFP was forwarded on 29.11.2010 to the following 6 agencies empanelled by DIT, GOI for submitting their bids.

- 1. Accenture Services Pvt. Limited
- 2. Hewlett Packard India Sales Pvt. Limited
- 3. Infosys Technologies Limited
- 4. L&T Infotech Limited
- 5. Tata Consultancy Services Limited
- 6. Wipro Limited

The project started on 22.12.2011 with the kickoff meeting under the Chairmanship of Chief Secretary, Punjab. Nodal Officers were appointed in all the 7 departments coming under the scope of the project. Since then, M/s Hewlett Packard India Sales Private Limited's team, on-site and off-site, is working in full coordination with the involved departments, Project Consultants, CDAC, NIC, SeMT and DoIT, Punjab for successful and timely completion of the project.

The project is currently expected to go-live in the month of June 2012 and thus making the State Portal and Service Delivery Gateway for the State of Punjab being available for citizen's use.

S. NO	DEPARTMENT	FINAL LIST OF SERVICES	
1	DEPARTMENT OF	1. ISSUANCE OF JOB CARD UNDER NREGS (NATIONAL RURAL EMPLOYMENT GUARANTEE AC	
	RURAL DEVELOPMENT	SCHEME	
	AND PANCHAYAT	2. Work under NREGS (NATIONAL RURAL EMPLOYMENT GUARANTEE SCHEME)	
2	SC/ OBC WELFARE	1. Ashirwad to Scheduled Caste, Christian girls and daughters of widows of any	
		CASTE AT THE TIME OF THEIR MARRIAGES.	
		2. MERIT CUM MEANS SCHOLARSHIP TO THE STUDENTS BELONGING TO MINORITY COMMUNITIES.	
		3. Post Matric Scholarship to SC students.	
		4. Post Matric Scholarship to OBC students.	
		5. Post Matric Scholarship to Minorities.	
		6. PRE MATRIC SCHOLARSHIP TO MINORITIES.	
		7. TERM LOAN SCHEME FOR SC.	
		8. TERM LOAN SCHEME FOR BC.	
		9. PROMOTION OF EDUCATION FOR BACKWARD CLASSES.	
3	DEPARTMENT OF	1. Issuing Ration Card.	
	FOOD AND CIVIL	2. Addition, Change and Deletion of name in Ration Card.	
	SUPPLIES		
4	LOCAL GOVERNMENT	1. ISSUING BIRTH CERTIFICATE IN URBAN AREAS.	
	DEPARTMENT	2. Issuing Death Certificate in Urban Areas.	
5	DEPARTMENT OF	1. ISSUING BIRTH CERTIFICATE IN RURAL AREAS.	
	Health & Family	2. Issuing Death Certificate in Rural Areas.	
	Welfare	3. ISSUING DISABILITY CERTIFICATE.	
6	DEPARTMENT OF	1. OLD AGE PENSION, WIDOW PENSION, DEPENDENT CHILDREN AND HANDICAP PENSION SCHEMES	
	SOCIAL SECURITY	(Urban Areas).	
		2. OLD AGE PENSION, WIDOW PENSION, DEPENDENT CHILDREN AND HANDICAP PENSION SCHEMES	
		(Rural Areas).	
		3. NATIONAL FAMILY BENEFIT SCHEME.	

7	PUNJAB POLICE	 FOREIGNER'S REGISTRATION/LATE REGISTRATION/VISA EXTENSION IN INDIA. CHARACTER CERTIFICATE. POLICE CLEARANCE CERTIFICATE (FOR PERSONS PRESENTLY RESIDING IN INDIA / FOR PERSONS PRESENTLY RESIDING IN FOREIGN COUNTRIES). VEHICLE FNOLIBY REQUEST.
		5. ONLINE REGISTRATION OF COMPLAINTS (E- COMPLAINTS).

b) Suwidha

About SUWIDHA project:

Governments world over have been criticized for not delivering the services for which they were created. The giant machinery remains at work with virtually no output. In the past, several attempts have been made to improve its efficiency by introducing Information Technology (IT), however, the dividends have been minimal and the plight of the citizen remains the same. The citizen wonders at the very sight of the digital gadgets used in government offices. The computers are planted with great expectations of creating miracles, but the whole effort turns out to be mere hype and internal data processing.

Initiating IT activities with government dilatory procedures cannot yield the desired results. At best it can slightly increase the efficiency of the staff. The citizen friendly system can only be built after Reengineering government processes while keeping citizen convenience as the prime goal of the whole exercise. The government has to redefine and redesign itself at all levels. Today, for example, for every petty service charge, one has to go to the bank and treasury for making payment before the application form is accepted in some other government office. The government needs to answer many questions such as:

- Why can't the petty fee be accepted at the counter itself and deposited in the treasury by the government office as a composite challan?
- What is the need to visit many branches for a single service?
- Why can't a citizen charter be defined with service delivery time frame depending upon the type of service desired?
- Why can't a control loop be included in each activity so that the delivery mechanism can be checked for quality?
- What is the need for verification again and again? Can't the services be provided on the spot?
- When there is a single government, why to have a number of faces to talk to the citizen?

SUWIDHA has been conceived to facilitate citizen by capturing the input at a single point, defining a specified delivery date depending upon the type of service and accepting cash at the counter itself. Following are the objectives of **SUWIDHA** Project:

- To provide service level convenience to the citizens
- Re-engineering of Government Processes to provide quality & timely services to citizens

- To integrate SUWIDHA Back-end Services (SUBS) with front-end to reduce the time of delivery.
- Linkage with Web based Citizens IT Interface (Web CITI) or Dialup based Citizens IT Interface (Dial CITI) to know the latest information about their service.
- To standardize the processes throughout the state.

Background

The project was initiated in August 2002 at Fatehgarh Sahib. It was inaugurated by Hon'ble Chief Minister of Punjab on 31.10.2002. The project was funded by Government of India, Department of Communication & Information Technology. The project was successfully completed by District Administration with technical support of National Informatics Centre, Punjab State Centre. Based on the success of the pilot, the Government of Punjab decided to implement this project in all districts of Punjab along with SUWIDHA Back-end Services (SUBS) of the Deputy Commissioner Branches in December 2004. The project replication started in all districts with technical support of NIC-District Centers. As of now, the project is being executed in all Deputy Commissioner's offices. All the given above have objectives been achieved successfully. Now the project has been extended to establish State Level Data Centre for SUWIDHA Project.

SERVICES

The following is the list of front-end citizen services covered under the SUWIDHA PROJECT [15]:

- 1. Issuance and renewal of Bus Passes to Freedom Fighters and Handicapped person
- 2. Pension to old age, widows, destitute children and disabled persons
- 3. Issuance and renewal of ID-Cards to freedom fighters
- 4. Character Verification
- 5. Issuance of Dependent Certificate to wards of freedom fighters
- 6. Issuance of Dependent Certificate to Riots/ terrorist victims
- 7. Attestation of Indemnity bond
- 8. Attestation and acceptance of Surety bond
- 9. Issuance of Nationality Certificate
- 10. Issuance of Birth Certificate
- 11. Issuance of Death Certificate
- 12. Attestation of Affidavit
- 13. Issuance of Unmarried Certificate
- 14. Issuance and renewal of Driving License
- 15. Issuance of Copy of a document
- 16. Passport Services
- 17. Counter Signing of Documents

- 18. Arms License Issuance System
- 19. Issuance of NOC (Petrol pump, marriage palace, Hotel & Restaurant, Cinema etc.)
- 20. Registration of Vehicle
- 21. Permission for fairs
- 22. Issuance & Renewal of Licenses for (Arms Dealers, Cinema, Video Parlour)

How SUWIDHA Works?

- The citizen approaches SUWIDHA Queue Counter and gets the Queue Token number.
- He waits for some time till his token number is displayed on the screen. On his turn at SUWIDHA Service Counter, he files his application.
- She/he is issued a receipt cum token number, which specifies the date of delivery of services. Each type of service has a pre-defined delivery time and system automatically calculates the service delivery date.
- All kind of payments for the fees etc can be made at the SUWIDHA counter. This further saves the inconvenience of the citizen caused to visit either bank or treasury office to deposit such payments.
- The application/case is then sent to the branch for action.
- In between the citizen can track the case with the help of SUWIDHA Token number through Dial CITI (which is IVR based system) or website, wherever implemented.
- In order to ensure the timely delivery, the DC monitors the progress regularly so that citizen does not have to visit the office un-necessarily.
- The delivery of documents/processed case is made on the specified date. The delivery of the documents is also from SUWIDHA Delivery Counter and not from the branch. This way the branches are able to concentrate on the backend work rather than attending to the citizens and this further helps in improving government services and the citizen are freed from inconvenience /harassment.

With this process, all applications received are recorded and monitored against the delivery due date, branch-wise. Computerized print, placement of processes has improved the quality of service. SUWIDHA Software provided the facility of local language (Punjabi) as well. The operators are available on the counters for the prescribed timings so easily accessibility to the citizens.

c) Punjab Wide Area Network (Pawan)

The National e-Governance Plan (NeGP) has identified various Mission Mode Projects, which are to be implemented in a phased manner over the next 3-4 years by the Line Ministries/Departments concerned at the Central and State level, as applicable, in addition to the various other e-Governance initiatives being taken by the respective States and Central Ministries. State Wide Area Network (PAWAN) has been identified as an element of the core infrastructure for supporting these e-Governance initiatives. The Government of Punjab views NeGP as a chance to take its e-Governance vision to greater heights.

The Government of Punjab is establishing the Punjab State Wide Area Network (PAWAN). This Wide Area Network (WAN) is envisaged as the backbone network for data, voice and video communications throughout the State. PAWAN would act as the vehicle for effective implementation of Electronic Governance (e-Governance) acro PAWAN would follow a 3 Tier structure through Point of Presence (POP) across the various levels:

- State Head Quarter or State Network Centre (SNC) -Tier I
- District Head Quarter or District Network Centre (DNC) -Tier II
- Sub Divisional Head Quarter or Sub Division Network Centre (SDNC) and the Block Head Quarters or Block Network Centers (BNC) -Tier III

Departmental offices of Government of Punjab shall be connected to these Points of Presence (POP) of PAWAN as Horizontal Office. PAWAN will be based on open standards, scalable with high capacity network to carry data, video and voice traffic between different offices of the Government of Punjab at the State, District and Block level. PAWAN is also expected to help in the rollout of central applications covered under NeGP through interconnection with the national backbone as envisaged by Gol as part of its PAWAN initiative.

Present Status

- GOI has approved the project at a project cost of Rs. 62.23 Crores over a span of five years.
- GOP has received Rs. 12 Crores as a first installment for the project.
- PwC has been appointed as the consultant.
- BSNL has been appointed s the Bandwidth Service provider.
- RFP has been sent to GOI for approval.

PAWAN Services

PAWAN shall cater to the information communication requirements of the entire state government and its departments. PAWAN shall facilitate the following minimum services to its entire user community [16]:

Core Services

- 1. Converged Network Services (Data/Voice/video)
 - Seamless end to end connectivity for all government offices across Punjab
 - Inter departmental connectivity at each location
 - Allow horizontal connectivity facilities at each POP of PAWAN

- Dedicated access to applications hosted at State and Central Department.
- Providing Internet access to all PAWAN users through Internet Gateway at SNC
- Voice over IP for government offices through IP
 Phone
- Point-to-point and point-to-multipoint video conferencing through High quality video equipments & Multimedia PC
- 2. Security Services
 - Secure data transmission between departmental offices.
 - Secure access to centralized applications
 - Access rule for departments to be connected to PAWAN
 - Access rule for VPN access to departmental network on PAWAN
 - Gateway Level Antivirus protection for SNC NOC
 - Perimeter Security for SNC NOC

Additional Services

- Help Desk Services for incident handling
- Provide VPN access to departmental network from remote sites
- Centralized Network Monitoring System
- Messaging services
- d) Implementing the Common Service Centre (Csc) Scheme in Punjab

Background of the Project:

(1) The State of Punjab intends to use Information & Communication Technology (ICT) as a vehicle for effective governance and to empower its citizens, with requisite wherewithal to contribute towards economic growth of the State.

(2) The Government of Punjab has invested in and implemented many e-Governance initiatives. The experience gained from these initiatives and the active support of government officials at all levels, the State departments are well prepared to support provisioning of services through the CSCs.

(3) The State covers a geographical spread of approximately 50,362 sq kms, which includes 12,278 villages. The total population of Punjab is 2, 43, 58, 999, (Census 2001) including 1, 60, 96, 488 heads staying in rural areas

Brief Description about the Project

Common Services Centers are envisioned as the front-end delivery points for Government, private and social sector services to rural citizens of India. The idea is to develop a platform that can enable Government, private and social sector organizations to integrate their social and commercial goals for the benefit of rural populations in the remotest corners of the country through a combination of IT as well as non-IT services.

Objectives:

- 1. The aim of the Scheme is not merely to roll out IT infrastructure but to build a network of 100,000+ rural businesses across India. To that effect, the CSC Scheme has been designed to create a value proposition for all stakeholders and alignment of their economic interests.
- 2. But beyond a delivery channel the CSC can play a role of an effective "change agent" that would provide a structured platform for socially inclusive community participation for collective developmental activities. Such change, it is proposed, would be undertaken through three important components:
- A Public Private Partnership (PPP) Framework
- Rural Entrepreneurship and Market Mechanisms
- Government policy and support

Benefits

- 1. Provide citizen centric services of the State and Central Government in a convenient and efficient manner through the CSCs across rural India.
- 2. Enhance the accountability, transparency and responsiveness of the Government to citizen's needs.
- 3. Provide efficient and cost effective methods of service delivery to departments and agencies.
- 4. Allow private and social sector to collaborate with the Government to offer world-c lass services in rural India.
- 5. Train village level entrepreneurs in business and IT management skills.
- 6. Empower the rural citizen through information dissemination and market linkages.

Present Status

According to Administrative Report 2008-09, The RFP for selection of Service Centre Agencies in under approval of Government of India.

e) Punjab Government Personnel Management System

The software has been got prepared in consultation / discussions with various departments of Punjab Government keeping in view that the same will be required by every office for the automation of employee's records. The new computerized system covers the following 6 functions related to Punjab Government employee's information:

- Personnel Information System
- Pay Accounting System
- Leave Accounting System
- Loan Accounting system
- General Provident Fund Accounting System
- Pension Accounting System

Present Status of Automation

Phase I (Implementation at Offices in Chandigarh and Mohali) Data Entry related to service books, leave details, GPF and Loan details of approx. 15,000 employees has been completed. Training to Employees has been completed and Computerized payroll of 54 departments/offices is being generated, data updating/migration is under progress at the remaining 18 locations.

Phase II (Implementation in 33 selected departments in all districts) Implementation is under progress for approximately 40,000 employees

Phase III (Implementation in remaining department in all districts of Punjab) Implementation in remaining departments in Phase III will start after the completion of Phase II.

Benefits of the Project

- Improvement in utilization of resources
- Provides accurate and timely information at various levels to assist the concerned authorities in effective decision making
- Makes information readily available for the benefit of the employees and the pensioners
- Reduces redundancy of efforts
- f) E-District in Punjab

E-District has been envisaged by Government of Punjab (GoP) as automation of workflow backend digitization, integration of multiple applications of different departments and process reengineering of the participating line departments like Revenue (Certificates, Revenue Court services, licenses, etc), Social Security (pension related services), Food and Civil Supply (PDS), Municipal department (Utilities), etc. This project is of paramount importance to the State as it would help in creating an electronic workflow system for the district administration and help in providing efficient individual department services through COMMON SERVICE CENTERS (CSCs) which would be the primary front end channels as envisaged in the project.

Objectives:

- To provide easy access to government services to common man, especially the people belonging to Scheduled Castes, Scheduled Tribes and women.
- Reengineering of the internal processes of District Administration, Subordinate offices and participating departments to increase functional efficiency.
- IT enabling of internal processes of District Administration and its subordinate offices to increase operational efficiency
- Creation of IT infrastructure for rolling out e-Governance plan right up to Block levels
- Develop capacities of human resources of Government to operate and maintain IT enabled systems and applications with confidence and

provide services to the people effectively and efficiently.

Districts are the de facto front-end of government where most Government-to-Consumer or G2C interaction takes place. The e-District project was conceptualized to improve this experience and enhance the efficiencies of the various Departments at the district-level to enable seamless service delivery to the citizen.

Front-ends under the scheme, in the form of citizen facilitation centers, are envisioned to be built at District-, Tehsil-, Sub-division- and Block- levels. Village-level front-ends would be established through GRAM SUWIDHA CENTRE (GSCs) for delivery of services.

Indicative services planned to be delivered through this MMP include:

- Certificates: Creation and distribution of certificates for income, domicile, caste, Birth, Death etc.
- Licenses: Arms Licenses etc.
- Public Distribution System (PDS): Issue of Ration Card, etc.
- Social Welfare Schemes: Disbursement of old-age pensions, family pensions, widow pensions, etc.
- Complaints: Related to unfair prices, absentee teachers, non-availability of doctor, etc.
- RTI: Online filing and receipt of information relating to the Right to Information Act.
- Linking with other e government projects: Registration, Land Records, and Driving Licences, etc.
- Information Dissemination: About government schemes, entitlements, etc.
- Assessment of taxes: Property tax, and other government taxes.
- Utility Payment: Payments relating to electricity, water bills property taxes etc.

VII. FUTURE OF E-GOVERNANCE IN PUNJAB

E-Governance is said to be pill of all ills of Governance. However many e-Governance projects are not succeeding or are facing bottlenecks. There is resistance to change or duplication of efforts in many initiatives. There are local language issues in some cases and lack of planning in others. Lack of infrastructure is a bottleneck and Universal Access is an issue. Lack of Process and Legal Reforms is hindering the projects and lack of technology and architecture is leading to slow implementation in Punjab.

There has been a lack of critical examination of process of strategizing; choice of applications; process of design and implementation. Often a supply side view is taken. Outcome and impact on clients, agencies and society is not assessed.

It emphasizes that the first step towards egovernance is understanding governance. It looks into Vision and Objectives of various successful countries and suggests guidelines for same. The following points are worth considerable for future of the e-governance in Punjab:

- 1. State should define as to which sections of the population constitute the vulnerable group that needs to be targeted. Their geographical spread needs to be mapped. Participatory approaches need to be used in developing e-Government programs and plans, so that the needs of the poor are well articulated and can be reflected in the choice of applications and their design.
- 2. Existing national and State e-Government programs and e-Government projects should be audited in a systematic way to determine the potential and actual impact on poor and the vulnerable. A Tool Kit can be designed for the purpose of carrying out such an audit.
- 3. Policy makers need to be sensitized to the fact that the digital divide will be further exacerbated unless e-Government specifically focuses on the poor and the vulnerable and that e-Government has the potential to deliver significant benefits to the vulnerable/poor.
- 4. Capacity needs to be built for e-Government program designers to:
 - To promote participation by relevant stakeholder groups from civil society in formulating e-Government plans and strategies.
 - Define policy frameworks that promote the use of different technologies that are relevant for the poor; provide incentive for creation of appropriate content, and create affordable and convenient access points.
 - Make application choices that can potentially impact the poor/vulnerable.
 - Create partnership with NGOs, media, and Private Sector in implementing pro-poor e-Governance.
- 5. Capacity needs to be built for project implementers to use participative methods in design and implementation of projects/ applications focused on the poor/vulnerable.
- 6. A large amount of training material (case studies, tool kits) needs to be created to support capacity building.
- 7. There is considerable scope regional for cooperation in sharing telecommunication infrastructure for creating access points, build content and exchange best practices. Moreover regional and cross-border development issues such as natural resources and disaster management, trade and transport, tourism etc are areas where regional e-government cooperation could be of significant mutual benefit. Mechanisms need to be evolved for developing such cooperation.

- The e-Governance application in Punjab needs to 8. build the trust of citizens in the system. It needs to ensure that the data and transactions of the citizen are secure. The information shared by the citizens should also remain safe and the privacy of the citizen needs to be protected. Whenever a citizen gets into any transaction with a Government agency, he shells out lot of personal information, which can be misused by the private sector and anti-social elements. Secured ways of transactions for the Government services are another issue of concern. The identity of citizens requesting services needs to be verified before they access or use the services. Here digital signature will play an important role in delivery of such services. But the infrastructure needed to support them is very expensive and requires constant maintenance. Hence a pertinent need still survives, compelling the authorities to ensure the authenticity in their transactions thereby gaining absolute trust and confidence of the citizen.
- 9. Cost Benefit Analysis:-Any e-Governance initiative must start with a clear understanding of the various costs involved in the project. We must also look into the Cost-Benefit-Analysis of the project. The investments in a project must look forward to the returns on the investments. Short term and long term plans with expected expenditures, income streams and deadlines may be worked out. The projects that are part of the e-governance initiatives need to be funded either through the Government sector or through the private sector. For the private sector to step into the funding activity their commercial interests needs to be ensured. Also the Government interest of Value Addition in services also needs to be taken care of while transferring the services to private sector. Advertising, sharing of Government information etc could be a few revenue generators for the Government.
- 10. Clear project objectives need to be set and projects need to be evaluated based on those objectives. The success of the project will depend on how far the stated objectives have been met. Another parameters which may define project success is the sustainability of projects over a long period and return on investments. The projects need to be evaluated as a constant improvement model even while implementation is underway. The interventions may be carried out at each stage of implementation. Bottlenecks and causes of delays should be documented, even though they may be removed later.
- 11. Raise awareness among public and private organizations Organize workshops, events, seminars, conferences with the objective of raising awareness about real opportunities and benefits that the ICT revolution can bring. Prepare for long-

2012

term solutions to problems by ensuring the availability of appropriate training programs for future management of technological and business changes.

12. Invest in human development – the success of einitiatives depends largely on human skills and capabilities. Accordingly, education and training initiatives must be considered as priority actions. Staff need to be trained to handle new processes and activities; they have to be given incentives (not necessarily monetary) to prevent the brain drain of skilled people; and they need to feel part of the organization by engaging in the decision making process. Some basic training needs necessary to be provided to community members, in general, in order for them to be able to use new facilities for accessing electronic information and services.

A community of professionals (policy makers, project implementers, academics, development practitioners) who can champion the need for pro-poor e-Governance need to be build [17]. The community can be built around a rich web site that provides knowledge resources and promotes an off line dialog within the community. Periodic face-to-face workshops focused on specific tools, policy frameworks can catalyze the process of community building. Work with Government agencies and training institutions to design training programs for Policy Makers on topics such as: auditing of National e-Governance Plans, enabling policies for rural telecom access, enabling framework for PPP. Similarly training programs for project managers of pro-poor e-Governance projects on: participatory design, critical success factors, choice of technologies, managing Public Private Partnerships and project management. Training programs for civil society on assessing demand for information and knowledge in rural areas and articulation of the demand.

VIII. Conclusion

E-governance helps to reform the way the Governments work, share information, engage citizens and deliver services to external and internal clients for the benefit of both government and the clients that they serve. The government should try to practice egovernment practices through these city centers so that it could be proved beneficial to the people. But connecting and bringing all the city centers on line is a very difficult task to do. But the need of hour for government is to concentrate not only on software and hardware, but to implement this strategy with honesty. Experts states that it better to first create strong administration, to bring all government employees under confidence, only then we can think to bring egovernance, to connect each and every person to this e-Governed world and to provide basic facilities to the citizens while sitting at home. Thus from above

discussions we conclude that a long term and a shortterm strategy for E-Governance implementation is the need of the hour. For successful implementation Standards, Infrastructure, Legislations, Strategy all needs to be in place. It also requires establishment of various institutions under the Ministry of Information Technology. It requires a Global Vision and local implementation. And above all it requires e-readiness in the minds of citizens and the Government employees.

IX. Acknowledgments

The authors are thankful to the management of BABA FARID GROUP OF INSTITUTIONS (Bathinda) for economic support and providing the facilities to prepare the research article. The authors are also thankful to all the faculty members of computer department for encouragement and co-operation in the preparation of this paper.

References Références Referencias

- Ministry of Information Technology (MIT) 'Electronic Governance - A Concept Paper', Ministry of Information Technology, India. [http://egov.mit.gov.in/], 2001.
- 2. E-government standards for interoperability, Government of India, Department of Information Technology, National Informatics Centre, Training division.
- National e-Governance Plan, Ministry of Communication & Information Technology, Government of India, [http://www.mit.gov.in/ default.aspx?id=827]
- Kochhar, S. & G. Dhanjal., "From governance to egovernance: An initial assessment of some of India's best projects", Technical Report, New Delhi: Skoch Consultancy Services, 2004.
- 5. http://go.worldbank.org/M1JHE0Z280 (extracted on 18.08.2008)
- 6. http://portal.unesco.org/ci/en/ev.phpURL_ID=4404 &URL_DO=DO_TOPIC&URL_SECTION=201.html
- 7. Inaugural address at IIT Delhi during International Conference on e-Governance.
- 8. UNPA and ASPA (2001) Benchmarking e-Government: A Global Perspective. http://unpan1.un.org/intradoc/groups/public/docum ents/un/unpan003984.pdf
- 9. Fraga, E. (2002) Trends in e-Government How to Plan, Design, Secure, and Measure E-Government, *Government Management Information Sciences (GMIS) Conference*, anta Fe, New Mexico.
- 10. Arvind Chhabra (2009-09-18). "Punjab: Progressive by nature: India Today". Indiatoday.intoday.in. Retrieved 2010-07-18.
- 11. Welcome to Official Web site of Punjab, India.
- 12. http://www.census2011.co.in/census/state/punjab.h tml

- 13. http://mit.gov.in/content/national-e-governance-plan
- 14. http://www.doitpunjab.gov.in/pdfs/projects/SSDG.p df
- 15. http://www.doitpunjab.gov.in/pdfs/projects/suwidha. pdf
- 16. http://www.doitpunjab.gov.in/pdfs/projects/pawan.p df
- 17. Government of India 2001 E-governance. Ministry of Personnel, Public Grievances and Pensions. http://persmin.nic.in/arpg/egov1.htm.



GLOBAL JOURNAL OF COMPUTER SCIENCE AND TECHNOLOGY INTERDISCIPLINARY Volume 12 Issue 11 Version 1.0 Year 2012 Type: Double Blind Peer Reviewed International Research Journal Publisher: Global Journals Inc. (USA) Online ISSN: 0975-4172 & Print ISSN: 0975-4350

Technological Opportunities and Solar Energy, to Contribute to Sustainable Development of Mexico

By Luis Barrera Aguilar, Dr. José Pablo Nuño De La Parra, Dr. José Alfredo López De Cosio, Horacio Lima Gutierrez, Dr. Maria Evelinda Santiago Jimenez & Dr. Hector Montiel Campos

Popular and Autonomous University of Puebla State (UPAEP)

Abstract - The bounded oil reserves and the need to reduce environmental pollution bordering increasingly to make solution proposals to combat the problem by reducing environmental pollution and on the other hand seek sustainability with energy savings and better quality of life for Mexicans in this paper propose alternatives to reduce fuel use and greater use of renewable energy using photovoltaic systems.

Unquestionably the Mexican political issue in energy will be a little difficult to treat, however proposals are sustainable use solar energy, leaving a balance profitable for Mexican society in the field of electromobility and basic needs such as what is the purification of water, with the search for alternatives to solve a social problem purified water consumption in rural areas, where currently burning firewood to boil water creates irreversible effects pollutants and respiratory diseases, to solve the environmental problem raises renewable energy use, using photovoltaic power systems, the same systems can also be used to replace the use of fossil energy and also have the advantage over fossil fuels that are able to reach the most remote and isolated areas, where needs are not yet covered, which is why the great importance of the benefits offered substantial PV systems for social benefit.

Keywords : photovoltaic systems, electro, hybrid cars, renewable energy, purified water, photovoltaic hybrid systems, photovoltaic systems simulation.

GJCST-E Classification: K.4.0



Strictly as per the compliance and regulations of:



© 2012. Luis Barrera Aguilar, Dr. José Pablo Nuño De La Parra, Dr. José Alfredo López De Cosio, Horacio Lima Gutierrez, Dr. Maria Evelinda Santiago Jimenez & Dr. Hector Montiel Campos. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License http://creativecommons.org/licenses/by-nc/3.0/), permitting all non-commercial use, distribution, and reproduction inany medium, provided the original work is properly cited.

Technological Opportunities and Solar Energy, to Contribute to Sustainable Development of Mexico

Luis Barrera Aguilar ^α, Dr. José Pablo Nuño De La Parra ^σ, Dr. José Alfredo López De Cosio ^ρ, Horacio Lima Gutierrez ^ω, Dr. Maria Evelinda Santiago Jimenez[¥] & Dr. Hector Montiel Campos[§]

Abstract - The bounded oil reserves and the need to reduce environmental pollution bordering increasingly to make solution proposals to combat the problem by reducing environmental pollution and on the other hand seek sustainability with energy savings and better quality of life for Mexicans in this paper propose alternatives to reduce fuel use and greater use of renewable energy using photovoltaic systems.

Unquestionably the Mexican political issue in energy will be a little difficult to treat, however proposals are sustainable use solar energy, leaving a balance profitable for Mexican society in the field of electromobility and basic needs such as what is the purification of water, with the search for alternatives to solve a social problem purified water consumption in rural areas, where currently burning firewood to boil water creates irreversible effects pollutants and respiratory diseases, to solve the environmental problem raises renewable energy use, using photovoltaic power systems, the same systems can also be used to replace the use of fossil energy and also have the advantage over fossil fuels that are able to reach the most remote and isolated areas, where needs are not yet covered, which is why the great importance of the benefits offered substantial PV systems for social benefit.

Keywords : photovoltaic systems, electro, hybrid cars, renewable energy, purified water, photovoltaic hybrid systems, photovoltaic systems simulation.

Introduction

Ι.

OW DOES THE TECHNOLOGICAL DEVELOPMENT IN THE FIELD OF SOLAR TECHNOLOGY CREATES OPPORTUNITIES AND SOCIAL BENEFIT AS WELL AS BEING RESPECTFUL OF THE ENVIRONMENT?

Take advantages of the technological development of solar energy and hybrid systems for identifying strategic opportunities socially beneficial and kind to the environment.

It is vital to incorporate clean energy systems, as there are also very bad international experiences in use of nuclear energy, as in the case of Chernobyl Russia in 1986, one of the factors to keep in mind is that the oil reserves will run out experts say, in fifty years [11].

Renewable energies are consistent with the concept of sustainable development as integral process that requires different society actors commitments and responsibilities in implementing the economic model, political, environmental and social, as well as consumption patterns that determine the quality of life. With respect to social problems with fossil fuels, the United States imports oil from different countries, so that its influence is global, both in the real economy and financial markets. On the supply side, oil-producing countries are in conflict zones and unstable, so registering a negative impact on the international financial markets. The difficulty of projecting oil prices, uncertainty in the estimation of future prices is one of the main points of the Agenda (international energy) despite the perceived high price insensitivity filing the lawsuit. On the other hand, specifically the United States seeks an increase in research investment in clean energy technologies [11].

Also, the projection, peak oil (Hubbert Peak) where the oil is in decline, that is will end, and that combustion is a cause of environmental degradation [18].

Within the global energy aspect there is a factor that must be considered, as is the issue of the effects of CO2 emissions than producing global warming impacting climate change, on the other hand, the

Author a : Popular and Autonomous University of Puebla State (UPAEP). Student of PhD in Strategic Planning and Management Technology. 21 Sur 1103 Col. Santiago, 72160. Puebla, Mexico. E-mail : luis.barrera@upaep.edu.mx

Author σ : Popular and Autonomous University of Puebla State (UPAEP). Postgraduate Interdisciplinary Center (CIP). 21 Sur 1103 Col. Santiago, 72160. Puebla, México. E-mail : pablo.nuno@upaep.mx

Author p : Popular and Autonomous University of Puebla State (UPAEP). Postgraduate Interdisciplinary Center (CIP). 21 Sur 1103 Col. Santiago, 72160. Puebla, México.

E-mail : josealfredo.lopez@upaep.mx

Author O : Popular and Autonomous University of Puebla State (UPAEP). Student of PhD in Economic Development and Sectoral strategic. 21 Sur 1103 Col. Santiago, 72160. Puebla, Mexico. E-mail : horacio.lima@upaep.edu.mx

E-Mall : Noraclo.IIMa@upaep.edu.Mx

Author ¥ : Professor, Popular and Autonomous University of Puebla State(UPAEP).Postgraduate Interdisciplinary Center (CIP). 21 Sur 1103 Col.Santiago, 72160. Puebla, México.

E-mail : evelindasantiago@yahoo.com.mx

Author § : (UDLAP). Professor full time. Sta. Catarina Mártir. Cholula, Puebla. C.P. 72810. México, Mex.

E-mail : hmontiel2001@yahoo.com.mx

intensive use of fuels derived oil called fossil fuels contributes significantly to irreversible climate change, here are some reasons why it is necessary to analyze and promote changes on the use of various types of energy, noting its benefits and drawbacks to the socioeconomic environment, but especially considering the environmental implications they bring to our planet, Earth, polluting energy use, currently reliance regarding the use of fossil fuels has created primarily two types of concerns in society: first, the environmental impacts associated their use and their impact on climate change, the country strategies regarding alternative energy and economic kind, should be based on a thorough assessment of these opportunities and costs in the medium and long term.

One factor to consider is that the oil reserves will run out, according to experts, in fifty years, this research is reviewed as using solar energy in conjunction with other energy sources (hybrid systems), to support minimize consumption of fossil fuels. Furthermore, the use of natural resources is of vital importance not only to prevent further contamination, if not for savings in the pockets of the Mexicans, they really need a better economy is one of the steps to becoming a developed country.

Furthermore looking for new ways to create and develop new business clusters aimed at environmental conservation.

We must put aside these proposals in the details of social problems that this will cause, because they do not appear in the first instance to the gas station owners and those who hold interests in oil rather than caring for the environment, that is another subject to be treated separately, this strategy includes proposals for technological innovation and cluster development.

a) Justification

Why solar energy? The sun is available worldwide, only in Mexico the average energy delivered by the sun is 2000 kW/m2 per year., With the passage of time the technologies enable better use of resources, and photovoltaic systems now allow get only 30% of the solar energy for electricity.

The use of solar energy systems in rural areas, and contingency areas have a high impact social benefit, for example, can electrify remote island with a type system, that is using photovoltaic panels, inverters and battery bank virtually anywhere there is sun, and in the case of Mexico, the sun is present all year.

You can have benefits of large scale, in the case of this article, we will discuss two major social problems, such as:

- 1. The use of fossil fuels for transportation and its replacement with photovoltaic systems.
- 2. How with the solar energy is possible to produce purified water in contingency zones and helping in

rural areas to meet the need of the vital liquid for survive.

Considering the definition of Michael Porter in his article, What Is Strategy?, considers the strategy as the creation of a unique and valuable position, involving different activities, hence we consider that the use of technological opportunities leads to strategic business. Therefore, if a resource such as solar energy, not being maximized, and technological opportunities are available, they can gain a competitive advantage that would position in strategic businesses.

Many strategic business opportunities that can arise from technological opportunities through the use of renewable energies, can be exploited with the blue ocean strategy.

Although long ignored seems that the potential of micropower, new markets and new manufacturing capabilities are helping to make solar PV systems in a global industry. Beyond political and financial interests, provides a sustainable use of technological interest.

This research will consider a solution for harnessing solar energy to be used in cars in Mexico, and propose new business alternatives based on Blue Ocean Strategy be proposed hybrid systems using photovoltaic batteries to recharge electric cars or hybrids 100% in Mexico to minimize the problem of polluting emissions and maximize solar energy using systems based on this combined between current energies, combined with photovoltaic cells.

All of this to determine and propose the use of these systems based on technical and economic feasibility.

II. STATE OF THE ART

a) Current situation

The solar photovoltaic systems currently represent a potential source of renewable energy, considering the volatility of international oil prices, and oil-producing countries are in conflict zones and unstable; represent a negative impact on international financial markets

R & D: both developed and developing countries should pay attention to the benefits associated with research and development, adopt new technologies, which results in improved environmental heritage and allows monetize [10]

Let us see how is the current global landscape in solar energy Affordable commercial PV systems current top performers are averaging 7m2 (monocrystalline silicon) for each 1 KW peak, ie peak 0.142KW/m2, per day on average.



Figure 1: Average solar radiation calculated on the basis of 24 hours per day, and considering the clouds (NASA Data 2012)

The sun is the source of renewable energy that covers a large part of the planet, so it is a source of great potential today.

One the needs of people in the event of contingencies is to take water to survive, but if this water is contaminated, is dangerous and can cause health problems very strong, so it should consume treated water, in such cases, so in this article a recommendation to use solar energy to purify water, and to support these emergency situations, including the recommendation is also used in rural areas currently without electricity to the national grid, where electric power can also be obtained from the sun.

There are various designs of water purification plants. Among them is the process of reverse osmosis purification process germicidal UV, ion exchange process for silver.

However the pure reverse osmosis process is not recommended because it removes all solids including salts that the body requires, so we recommend a water purification plant consists of traditional sand filters, activated carbon filter 5 microns, ultraviolet lamp, and ozone.

As shown following



Figure 2 : Standard equipment water purification

In the case of transport, towards replacing fossil energy with renewable energy we have:

The world is facing a huge global campaign, which aims to incorporate the guickest energy solutions based on renewable sources. [2]

Various designers and automakers with energy saving strategies. Among them is its strategy VW Think Blue, developing hybrid cars.

Renault with its strategy called ZE (zero emissions)

Even Nissan USA introduces the 100% electric cars in 2012, with its model 100% electric Nissan Leaf In Mexico there is now a brand marketed since

2010 Zilent of Mexico The 100% electric Nissan LEAE will enter the

The 100% electric Nissan LEAF will enter the Mexican market in 2013.

b) Current technology electric cars

It is based on cars occupy occupy moved with electric motors and a battery system for mobility [21], see diagram 1

c) Current technology hybrid cars

Are those cars still manage internal combustion engine combined with an electric motor for speeds averaging 50 km / hr. After that internal combustion engine used

Source IAA Frankfurt am Main [20], see diagram 4.



Diagram 3 : Electroauto



Diagram 4 : Hybrid Cars

Plug in.-System is a system based on connection to an AC outlet, it is designed for electric cars can recharge battery during parking, see diagram 13

They choose to make clean energy research using photovoltaics, since the sun is a renewable resource that is not being exploited Mexico efficiently to meet important needs, especially for the case of basic needs such as water purification, traditional methods currently used power supply and remote contingency zones, such as gasoline plants using such systems for energizing.

Besides the use of solar energy systems in rural areas, and contingency areas have a high impact social benefit

There is a strategic model of the process of developing and exploiting technological opportunities based on evidence of cases where explained as the result from the different activities carried out in the area of the university, such as research results, transfer agreements technology (or combination of both), academic and specialized services, are potential sources of technological opportunities. [15]

The degree of technological opportunity at maturity is reached the desired value correlation and

ability to create value in addition to a technological opportunity is not a high risk, and that in turn is obvious in its benefits.

An idea can subsequently using creativity can become a technological opportunity. The exploitation of technological opportunity in perception-ability to create value from a market need from unemployed resources or underemployed, this leads to the opportunity to create a business idea.

III. METHODOLOGY

In the case of the photovoltaic system technical basis for the study, to use this system in many applications, in this case it is recommended to water purification and photovoltaic electric mobility.

The methodology used to develop research methods developed in simulation [9]; conducting a process of combining information from the NASA database and calculating between simulation programs of German origin, Homer and Insel respectively, analysis information (variables) and results in order to present an overview of the research topic. (basis is taken from a photovoltaic system of 1 Kilowatt peak (unit is a measure for the study), and an example is simulated in Puebla Mexico, as a case study, however for each region should be calculated with GPS data of each place to investigate.

The methodology for this research done can be summarized in the following points:

- 1. Uptake and research of solar resource data, photovoltaic system definition as well as electricity demand parameters to be used according to the size of the water purification system.
- 2. Simulation software system Insel and Homer (annual solar power complete system behavior and system including batteries)

- 3. Analysis of information
- 4. Results and recommendations concludes proposals for implementation in Mexico

IV. Definition of Resources, Energy and Systems to Simulate

a) Resources to simulate solar site as exemplified case (City of Puebla in Mexico)

Data are obtained through NASA database, from global position (GPS)

Site: Mexico	Units	Value	Data Record
Latitude	grad	19° 03` N	7 Norte 3208 Puebla, Pue
Longitude	grad	98°12'0	7 Norte 3208 Puebla Pue
Altitude	m	2147	
Global solar radiation	kWh/m²/d	5.40	Annual average
Maximum global solar radiation	kWh/m²/d	6.21	
Minimum global solar radiation	kWh/m²/d	4.49	
Average Precipitation	Mm/D	2.71	Monthly Averaged Precipitation
Annual average wind speed***	m/s	2.99	Monthly Averaged Wind Speed At 10 m

Table 1 : Solar Resources NASA data obtained

Energy consumption to calculate 1 Kilowatt (case study) Photovoltaic System Definition to simulate

Component	Units	Value	Comments
PV generator modules	k₩	1.34	6 modules @ 230 W Nominal
Battery bank	kWh	7.2	12 pieces Hoppeke 60PzS
			600 @ 600 Ah _{c 10} ,1.80 U _e /cell
Charger for Battery bank			Sunny Charger 50
Inverter	kW	1.2	1 sunny Island 2224
Transformator			Inside 220 Volts, output 120
			Volts

Table 2 : System Components PV system to simulate



Diagram 5 : Photovoltaic system to simulate peak 1Kilowatt

V. Simulation and Results

a) SIMULATION (Software INSEL and HOMER)

This simulation describes the behavior of the PV system and inverter for a year, the simulation was done in 3 different angle of inclination 20° , 30° and 45° , in three seasons, January, June and August, to decide the best average angle.



Diagram 6 : Simulation hours sun-year degree tilt PV system

b) Simulation software HOMER) - Best angle of inclination of the photovoltaic system

In this simulation is analyzed which is the best angle of inclination to take into account the different seasons.

Comparison 20 °, 30 ° and 45 ° in January, compared to 20 °, 30 ° and 45 ° in June and compared 20 °, 30 ° and 45 ° in August.



Diagram 7: The generally results indicated that the best angle is 45°

c) Simulation with HOMER software (battery charging) State of Charge (3 types of battery in series arrangement of 6 units to be 12V) nominal voltage of each battery (2V)

i. Hoppecke 40pzS200 (below 20%) Not recommended



Diagram 8 : Hoppecke battery-simulation 40pzS200

ii. Hoppecke 6OpzS600 (30% load, in the months June, July, ag, Sept, Oct, Nov, dec.)



Diagram 9 : Hoppecke battery simulation 6OpzS600

iii. Hoppecke 6OpzS600 (30% load, in the months June, July, ag, Sept, Oct, Nov, dec.)

VI. Results and Recommendations

a) Case best angle of the photovoltaic system

Recommendations: In December, January, the best angles ranging from 30 $^\circ$ to 45 $^\circ,$ but half of the year is recommended to use at least 20 $^\circ,$ recommended a

system with flexible position because it is not possible to collect the same energy with a system static round.

However if you use static angle should be 45 $^\circ,$ which are those that have year-round range of the system.

b) Case battery arrangement

- I. Hoppecke 4OpzS200 not recommended load below 20% is not recommended
- II. Hoppecke 6OpzS600 (30% load, in the months June, July, ag, Sept, Oct, Nov, dec.)
- (Recommended, with an emergency backup generator see diagram 3)

See diagram 10 (emergency)

VII. **PROPOSALS**

a) Proposal Called called water purification system and portable PV

Photovoltaic system mounted in one transport to meet demands in different areas, even in emergency zones, contingency, including support for victims, in this case required the purification system type photovoltaic Island.



Diagram 10 : (Emergency case)



Diagram 11 : Proposed water purification system photovoltaic and transportable

b) Proposal Photovoltaic Electromobility

Proposal number one contribution to Mexico;

Proposal charging stations based automotive battery PV panels, process change and filling

(This is based on as water large bottles are filled, and then exchanged for refill) **Proposal a)**

Filling and battery replacement

Note: Changing batteries in the International Automobil visualize Exposition (IAA) in Frankfurt as Renault proposal for Isrraelita market is dealing directly with those charged Reanault pavilion.

The contribution of this paper is how to recharge using a PV process and exchange of batteries, similar to a process used water large bottles in Mexico. This oriented blue ocean strategy [1] can create a new business opportunity-constructive innovation, strategic projection-based strategy toolbox / prospective planning.

This partially replace some of the stations, looking at it from the point of view as a strategic planning and foresight in the diamond of Michael Porter as a factor for gasoline threat of new entrants, and from the point of view of technological innovation as products substitutes.

Proposal b) adequate point of view of authors;

Note: This issue was set out in proposed electromobility forum in Berlin, Germany [6], but only plan to use in specialized designs for this application, so the contribution of authors is to apply the concept to even current and electric cars hybrids forthcoming entry. Proposal c) Provide 100% of authors, application in mobile stations, to reach rural areas, remote areas where the cost of automotive mobility is even more expensive and involves logistics of fuels, it is released with natural solar energy, although it is a very efficient solution also helps resover a socioeconomic problem.

In addition to the 100% electric cars, and this includes the cars for example Toyota Hybrids Prius Plug-in)

The filling process is not static photovoltaic proposed by Renault ZE in their strategy, source http://www.renault-ze.com/de-de/home-634.html

The contribution of (Luis Barrera Aguilar recharging is the process by electromobility PV based solar power without requiring that cars have integrated photovoltaic system.

This also oriented blue ocean strategy [1] can create a new business opportunity-constructive innovation, strategic projection-based strategy [8] based on methodology toolbox / prospective planning. See diagram 12



Diagram 12 : Proposal b)

Explanation. - The system is based on load type photovoltaic Island (photovoltaic panels that power a charger controller that distributes load DC batteries.), See Figure 5



Photovoltaic System
 PV+Inverter
 Charger battery System
 Electro car batteries



Diagram 13 : System load electro cars, photovoltaic Island type (Proposal)

Proposal number three hybrid system load. (more photovoltaic wind)

Proposal for battery charging stations of electric hybrid systems based automotive charging, photovoltaic panels and wind systems, which can be used in supermarkets and public places.

While this is also based on an idea still in Fraunhofer research in Karlsruhe Germany. For cars specifically for this use, the contribution of authors (Barrera, Nuño), is to use already existing 100% electric cars and hybrids. See diagram 6



Diagram 14 : Proposal C)

VIII. Recommendations: (Use in Photovoltaic Electromobility)

In the case of public transport in the cities of Mexico, it is recommended to implement the proposal 1, because the change is too fast replacing batteries charged by renewable energy systems for batteries, so efficient changeover time.

In this case you can not use public transport proposal 2 and 3 because the routes are minor and can be recharged while the car was stationary.

For rural zones are also recommended implementation proposals for resolving even the current

disadvantages of logistics fuel, thus can solve this problem.

IX. GENERAL CONCLUSIONS

This needs-based, there is a photovoltaic system that can be used to meet different needs of vital importance, such as transport (Electromobility photovoltaic), purified water obtained by electricity from solar power, you can even follow a study later that can raise water heating and cooking with the same energy system proposed.

References Références Referencias

- 1. W.Chan Quin, Renee Maubogrne (2005). The Blue Ocean Strategy, Harvard Business School Press, Boston Massachusetts,.
- Medina, C. (2007). Como plantear un problema de investigación y seleccionar un diseño de estudio apropiado. Revista Archivos en medicina familiar, Redalyc, 9(3), 127-132.
- 3. Hernández, R., Fernández, C., y Baptista, L. (2010). Metodología de la investigación. México: McGraHill.
- 4. Michael Porter. (2008). the Five Competitive Forces That Shape Strategy. USA: Harvard Business School Publishing 2008.
- Ronald V. Giles. Mecánica de los Fluidos e Hidráulica Editorial McGraw - Hill de México, 1980/ pp 20-21
- Desinfección efectiva de agua embotellada con Ozono. Albicker, Carlos., Volumen 1 - Número 1, 1 de Mayo de 2001, Paginas 22-25
- Erwin Beutelspacher Santiago,2005,Diseño y construcción de un generador de ozono para un sistema de purificación de agua, pp 10-12, Cenidet Mexico
- 8. Kaiser R.1995, Sizing Photovoltaic Systems In Fraunhofer Institute for Solar Energy Systems: Course Book for the seminar: Photovoltaic Systems, Freiburg Germany, pp 403-440,
- 9. Franzis Verlag, Poing R.2007, Software paket Photovoltaic Systems, Germany,
- De Paula, G., Cristian, L. (2009). Inseguridad energética y gestión de recursos naturales estratégicos: análisis de la política de biocombustibles en Argentina en el contexto global. Revista UNISCI Discussion, Redaly, 1(20), 60-77
- Barrera L., Montiel H. Lima H, Ramirez I, Sanchez, R. Serna F. (2011). Global Social and economic impact on the use of Biofuels. Golabal Journals Inc., Vol 11/5
- http://revistadelconsumidor.gob.mx/?p=17900 México 2011, podcast número 70 de la revista del consumidor.
- 13. http://www.atl.org.mx/index.php?option=com_conte nt&view=article&id=1508:aplican-nanotecnologiapara-purificar-agua-en-mexico&catid=159:nuevas-

tecnologias&Itemid=827 (Nanotecnología aplicada a la purificación de agua)

- Nfah, Ngundam. (2008). Simulation of off-grid generation options for remote villages in Cameroon, Renewable Energy 33 1064–1072
- Montiel, Solé. (2008) .Existencia, descubrimiento y explotación de oportunidades tecnológicas, Revista de Administración, Finanzas y Economía (Journal of Management, Finance and Economics) ITESM, vol. 2, núm. 2, pp. 104-124. México
- 16. http://www.ciceana.org.mx/recursos/Desarrollo%20 sustentable.pdf
- 17. Michael Porter (2012), conferencia –Competitividad y valor compartido, Puebla, México.
- Jorge Laine (2009), Ciento cincuenta años de combustión de hidrocarburos fósiles: las alternativas emergentes, Revista Ingeniería y ciencias, vol 5, úm 10, pp 11-31, Colombia.
- Michel Godet. (2000). the art of Scenarios and Strategic Planning: Tools and Pitfalls. Technological Forecasting and Social Change 65, 3–22 (2000) Ó 2000 Elsevier Science Inc. Avenue of the Americas, New York, NY 10010
- 20. International Automotive Ausstellung IAA Frankfurt am main Germany. (2011).
- 21. Elektromovilität Titelthema Magazin, Fraunhofer ISI Karlsruhe Germany. (2009).

Global Journals Inc. (US) Guidelines Handbook 2012

WWW.GLOBALJOURNALS.ORG

Fellows

FELLOW OF ASSOCIATION OF RESEARCH SOCIETY IN COMPUTING (FARSC)

- 'FARSC' title will be awarded to the person after approval of Editor-in-Chief and Editorial Board. The title 'FARSC" can be added to name in the following manner. eg. **Dr. John E. Hall, Ph.D., FARSC or William Walldroff Ph. D., M.S., FARSC**
- Being FARSC is a respectful honor. It authenticates your research activities. After becoming FARSC, you can use 'FARSC' title as you use your degree in suffix of your name. This will definitely will enhance and add up your name. You can use it on your Career Counseling Materials/CV/Resume/Visiting Card/Name Plate etc.
- 60% Discount will be provided to FARSC members for publishing research papers in Global Journals Inc., if our Editorial Board and Peer Reviewers accept the paper. For the life time, if you are author/co-author of any paper bill sent to you will automatically be discounted one by 60%
- FARSC will be given a renowned, secure, free professional email address with 100 GB of space egiponnhall@globaljournals.org. You will be facilitated with Webmail, Spam Assassin, Email Forwarders, Auto-Responders, Email Delivery Route tracing, etc.
- FARSC member is eligible to become paid peer reviewer at Global Journals Inc. to earn up to 15% of realized author charges taken from author of respective paper. After reviewing 5 or more papers you can request to transfer the amount to your bank account or to your PayPal account.
- Eg. If we had taken 420 USD from author, we can send 63 USD to your account.
- FARSC member can apply for free approval, grading and certification of some of their Educational and Institutional Degrees from Global Journals Inc. (US) and Open Association of Research, Society U.S.A.
- After you are FARSC. You can send us scanned copy of all of your documents. We will verify, grade and certify them within a month. It will be based on your academic records, quality of research papers published by you, and 50 more criteria. This is beneficial for your job interviews as recruiting organization need not just rely on you for authenticity and your unknown qualities, you would have authentic ranks of all of your documents. Our scale is unique worldwide.
- FARSC member can proceed to get benefits of free research podcasting in Global Research Radio with their research documents, slides and online movies.
- After your publication anywhere in the world, you can upload you research paper with your recorded voice or you can use our professional RJs to record your paper their voice. We can also stream your conference videos and display your slides online.
- FARSC will be eligible for free application of Standardization of their Researches by Open Scientific Standards. Standardization is next step and level after publishing in a journal. A team of research and professional will work with you to take your research to its next level, which is worldwide open standardization.

• FARSC is eligible to earn from their researches: While publishing his paper with Global Journals Inc. (US), FARSC can decide whether he/she would like to publish his/her research in closed manner. When readers will buy that individual research paper for reading, 80% of its earning by Global Journals Inc. (US) will be transferred to FARSC member's bank account after certain threshold balance. There is no time limit for collection. FARSC member can decide its price and we can help in decision.

MEMBER OF ASSOCIATION OF RESEARCH SOCIETY IN COMPUTING (MARSC)

- 'MARSC' title will be awarded to the person after approval of Editor-in-Chief and Editorial Board. The title 'MARSC" can be added to name in the following manner. eg. Dr. John E. Hall, Ph.D., MARSC or William Walldroff Ph. D., M.S., MARSC
- Being MARSC is a respectful honor. It authenticates your research activities. After becoming MARSC, you can use 'MARSC' title as you use your degree in suffix of your name. This will definitely will enhance and add up your name. You can use it on your Career Counseling Materials/CV/Resume/Visiting Card/Name Plate etc.
- 40% Discount will be provided to MARSC members for publishing research papers in Global Journals Inc., if our Editorial Board and Peer Reviewers accept the paper. For the life time, if you are author/co-author of any paper bill sent to you will automatically be discounted one by 60%
- MARSC will be given a renowned, secure, free professional email address with 30 GB of space eg.johnhall@globaljournals.org. You will be facilitated with Webmail, Spam Assassin, Email Forwarders, Auto-Responders, Email Delivery Route tracing, etc.
- MARSC member is eligible to become paid peer reviewer at Global Journals Inc. to earn up to 10% of realized author charges taken from author of respective paper. After reviewing 5 or more papers you can request to transfer the amount to your bank account or to your PayPal account.
- MARSC member can apply for free approval, grading and certification of some of their Educational and Institutional Degrees from Global Journals Inc. (US) and Open Association of Research, Society U.S.A.
- MARSC is eligible to earn from their researches: While publishing his paper with Global Journals Inc. (US), MARSC can decide whether he/she would like to publish his/her research in closed manner. When readers will buy that individual research paper for reading, 40% of its earning by Global Journals Inc. (US) will be transferred to MARSC member's bank account after certain threshold balance. There is no time limit for collection. MARSC member can decide its price and we can help in decision.

AUXILIARY MEMBERSHIPS

ANNUAL MEMBER

- Annual Member will be authorized to receive e-Journal GJCST for one year (subscription for one year).
- The member will be allotted free 1 GB Web-space along with subDomain to contribute and participate in our activities.
- A professional email address will be allotted free 500 MB email space.

PAPER PUBLICATION

• The members can publish paper once. The paper will be sent to two-peer reviewer. The paper will be published after the acceptance of peer reviewers and Editorial Board.

The Area or field of specialization may or may not be of any category as mentioned in 'Scope of Journal' menu of the GlobalJournals.org website. There are 37 Research Journal categorized with Six parental Journals GJCST, GJMR, GJRE, GJMBR, GJSFR, GJHSS. For Authors should prefer the mentioned categories. There are three widely used systems UDC, DDC and LCC. The details are available as 'Knowledge Abstract' at Home page. The major advantage of this coding is that, the research work will be exposed to and shared with all over the world as we are being abstracted and indexed worldwide.

The paper should be in proper format. The format can be downloaded from first page of 'Author Guideline' Menu. The Author is expected to follow the general rules as mentioned in this menu. The paper should be written in MS-Word Format (*.DOC,*.DOCX).

The Author can submit the paper either online or offline. The authors should prefer online submission.<u>Online Submission</u>: There are three ways to submit your paper:

(A) (I) First, register yourself using top right corner of Home page then Login. If you are already registered, then login using your username and password.

(II) Choose corresponding Journal.

(III) Click 'Submit Manuscript'. Fill required information and Upload the paper.

(B) If you are using Internet Explorer, then Direct Submission through Homepage is also available.

(C) If these two are not convenient, and then email the paper directly to dean@globaljournals.org.

Offline Submission: Author can send the typed form of paper by Post. However, online submission should be preferred.

© Copyright by Global Journals Inc.(US) | Guidelines Handbook

PREFERRED AUTHOR GUIDELINES

MANUSCRIPT STYLE INSTRUCTION (Must be strictly followed)

Page Size: 8.27" X 11'"

- Left Margin: 0.65
- Right Margin: 0.65
- Top Margin: 0.75
- Bottom Margin: 0.75
- Font type of all text should be Swis 721 Lt BT.
- Paper Title should be of Font Size 24 with one Column section.
- Author Name in Font Size of 11 with one column as of Title.
- Abstract Font size of 9 Bold, "Abstract" word in Italic Bold.
- Main Text: Font size 10 with justified two columns section
- Two Column with Equal Column with of 3.38 and Gaping of .2
- First Character must be three lines Drop capped.
- Paragraph before Spacing of 1 pt and After of 0 pt.
- Line Spacing of 1 pt
- Large Images must be in One Column
- Numbering of First Main Headings (Heading 1) must be in Roman Letters, Capital Letter, and Font Size of 10.
- Numbering of Second Main Headings (Heading 2) must be in Alphabets, Italic, and Font Size of 10.

You can use your own standard format also. Author Guidelines:

1. General,

- 2. Ethical Guidelines,
- 3. Submission of Manuscripts,
- 4. Manuscript's Category,
- 5. Structure and Format of Manuscript,
- 6. After Acceptance.

1. GENERAL

Before submitting your research paper, one is advised to go through the details as mentioned in following heads. It will be beneficial, while peer reviewer justify your paper for publication.

Scope

The Global Journals Inc. (US) welcome the submission of original paper, review paper, survey article relevant to the all the streams of Philosophy and knowledge. The Global Journals Inc. (US) is parental platform for Global Journal of Computer Science and Technology, Researches in Engineering, Medical Research, Science Frontier Research, Human Social Science, Management, and Business organization. The choice of specific field can be done otherwise as following in Abstracting and Indexing Page on this Website. As the all Global

© Copyright by Global Journals Inc. (US) | Guidelines Handbook

Journals Inc. (US) are being abstracted and indexed (in process) by most of the reputed organizations. Topics of only narrow interest will not be accepted unless they have wider potential or consequences.

2. ETHICAL GUIDELINES

Authors should follow the ethical guidelines as mentioned below for publication of research paper and research activities.

Papers are accepted on strict understanding that the material in whole or in part has not been, nor is being, considered for publication elsewhere. If the paper once accepted by Global Journals Inc. (US) and Editorial Board, will become the copyright of the Global Journals Inc. (US).

Authorship: The authors and coauthors should have active contribution to conception design, analysis and interpretation of findings. They should critically review the contents and drafting of the paper. All should approve the final version of the paper before submission

The Global Journals Inc. (US) follows the definition of authorship set up by the Global Academy of Research and Development. According to the Global Academy of R&D authorship, criteria must be based on:

1) Substantial contributions to conception and acquisition of data, analysis and interpretation of the findings.

2) Drafting the paper and revising it critically regarding important academic content.

3) Final approval of the version of the paper to be published.

All authors should have been credited according to their appropriate contribution in research activity and preparing paper. Contributors who do not match the criteria as authors may be mentioned under Acknowledgement.

Acknowledgements: Contributors to the research other than authors credited should be mentioned under acknowledgement. The specifications of the source of funding for the research if appropriate can be included. Suppliers of resources may be mentioned along with address.

Appeal of Decision: The Editorial Board's decision on publication of the paper is final and cannot be appealed elsewhere.

Permissions: It is the author's responsibility to have prior permission if all or parts of earlier published illustrations are used in this paper.

Please mention proper reference and appropriate acknowledgements wherever expected.

If all or parts of previously published illustrations are used, permission must be taken from the copyright holder concerned. It is the author's responsibility to take these in writing.

Approval for reproduction/modification of any information (including figures and tables) published elsewhere must be obtained by the authors/copyright holders before submission of the manuscript. Contributors (Authors) are responsible for any copyright fee involved.

3. SUBMISSION OF MANUSCRIPTS

Manuscripts should be uploaded via this online submission page. The online submission is most efficient method for submission of papers, as it enables rapid distribution of manuscripts and consequently speeds up the review procedure. It also enables authors to know the status of their own manuscripts by emailing us. Complete instructions for submitting a paper is available below.

Manuscript submission is a systematic procedure and little preparation is required beyond having all parts of your manuscript in a given format and a computer with an Internet connection and a Web browser. Full help and instructions are provided on-screen. As an author, you will be prompted for login and manuscript details as Field of Paper and then to upload your manuscript file(s) according to the instructions.



© Copyright by Global Journals Inc.(US)| Guidelines Handbook

To avoid postal delays, all transaction is preferred by e-mail. A finished manuscript submission is confirmed by e-mail immediately and your paper enters the editorial process with no postal delays. When a conclusion is made about the publication of your paper by our Editorial Board, revisions can be submitted online with the same procedure, with an occasion to view and respond to all comments.

Complete support for both authors and co-author is provided.

4. MANUSCRIPT'S CATEGORY

Based on potential and nature, the manuscript can be categorized under the following heads:

Original research paper: Such papers are reports of high-level significant original research work.

Review papers: These are concise, significant but helpful and decisive topics for young researchers.

Research articles: These are handled with small investigation and applications

Research letters: The letters are small and concise comments on previously published matters.

5.STRUCTURE AND FORMAT OF MANUSCRIPT

The recommended size of original research paper is less than seven thousand words, review papers fewer than seven thousands words also. Preparation of research paper or how to write research paper, are major hurdle, while writing manuscript. The research articles and research letters should be fewer than three thousand words, the structure original research paper; sometime review paper should be as follows:

Papers: These are reports of significant research (typically less than 7000 words equivalent, including tables, figures, references), and comprise:

(a)Title should be relevant and commensurate with the theme of the paper.

(b) A brief Summary, "Abstract" (less than 150 words) containing the major results and conclusions.

(c) Up to ten keywords, that precisely identifies the paper's subject, purpose, and focus.

(d) An Introduction, giving necessary background excluding subheadings; objectives must be clearly declared.

(e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition; sources of information must be given and numerical methods must be specified by reference, unless non-standard.

(f) Results should be presented concisely, by well-designed tables and/or figures; the same data may not be used in both; suitable statistical data should be given. All data must be obtained with attention to numerical detail in the planning stage. As reproduced design has been recognized to be important to experiments for a considerable time, the Editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned un-refereed;

(g) Discussion should cover the implications and consequences, not just recapitulating the results; conclusions should be summarizing.

(h) Brief Acknowledgements.

(i) References in the proper form.

Authors should very cautiously consider the preparation of papers to ensure that they communicate efficiently. Papers are much more likely to be accepted, if they are cautiously designed and laid out, contain few or no errors, are summarizing, and be conventional to the approach and instructions. They will in addition, be published with much less delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and to make suggestions to improve briefness.

It is vital, that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

Format

Language: The language of publication is UK English. Authors, for whom English is a second language, must have their manuscript efficiently edited by an English-speaking person before submission to make sure that, the English is of high excellence. It is preferable, that manuscripts should be professionally edited.

Standard Usage, Abbreviations, and Units: Spelling and hyphenation should be conventional to The Concise Oxford English Dictionary. Statistics and measurements should at all times be given in figures, e.g. 16 min, except for when the number begins a sentence. When the number does not refer to a unit of measurement it should be spelt in full unless, it is 160 or greater.

Abbreviations supposed to be used carefully. The abbreviated name or expression is supposed to be cited in full at first usage, followed by the conventional abbreviation in parentheses.

Metric SI units are supposed to generally be used excluding where they conflict with current practice or are confusing. For illustration, 1.4 I rather than $1.4 \times 10-3$ m3, or 4 mm somewhat than $4 \times 10-3$ m. Chemical formula and solutions must identify the form used, e.g. anhydrous or hydrated, and the concentration must be in clearly defined units. Common species names should be followed by underlines at the first mention. For following use the generic name should be constricted to a single letter, if it is clear.

Structure

All manuscripts submitted to Global Journals Inc. (US), ought to include:

Title: The title page must carry an instructive title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) wherever the work was carried out. The full postal address in addition with the e-mail address of related author must be given. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining and indexing.

Abstract, used in Original Papers and Reviews:

Optimizing Abstract for Search Engines

Many researchers searching for information online will use search engines such as Google, Yahoo or similar. By optimizing your paper for search engines, you will amplify the chance of someone finding it. This in turn will make it more likely to be viewed and/or cited in a further work. Global Journals Inc. (US) have compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Key Words

A major linchpin in research work for the writing research paper is the keyword search, which one will employ to find both library and Internet resources.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy and planning a list of possible keywords and phrases to try.

Search engines for most searches, use Boolean searching, which is somewhat different from Internet searches. The Boolean search uses "operators," words (and, or, not, and near) that enable you to expand or narrow your affords. Tips for research paper while preparing research paper are very helpful guideline of research paper.

Choice of key words is first tool of tips to write research paper. Research paper writing is an art.A few tips for deciding as strategically as possible about keyword search:



© Copyright by Global Journals Inc.(US) | Guidelines Handbook

- One should start brainstorming lists of possible keywords before even begin searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in research paper?" Then consider synonyms for the important words.
- It may take the discovery of only one relevant paper to let steer in the right keyword direction because in most databases, the keywords under which a research paper is abstracted are listed with the paper.
- One should avoid outdated words.

Keywords are the key that opens a door to research work sources. Keyword searching is an art in which researcher's skills are bound to improve with experience and time.

Numerical Methods: Numerical methods used should be clear and, where appropriate, supported by references.

Acknowledgements: Please make these as concise as possible.

References

References follow the Harvard scheme of referencing. References in the text should cite the authors' names followed by the time of their publication, unless there are three or more authors when simply the first author's name is quoted followed by et al. unpublished work has to only be cited where necessary, and only in the text. Copies of references in press in other journals have to be supplied with submitted typescripts. It is necessary that all citations and references be carefully checked before submission, as mistakes or omissions will cause delays.

References to information on the World Wide Web can be given, but only if the information is available without charge to readers on an official site. Wikipedia and Similar websites are not allowed where anyone can change the information. Authors will be asked to make available electronic copies of the cited information for inclusion on the Global Journals Inc. (US) homepage at the judgment of the Editorial Board.

The Editorial Board and Global Journals Inc. (US) recommend that, citation of online-published papers and other material should be done via a DOI (digital object identifier). If an author cites anything, which does not have a DOI, they run the risk of the cited material not being noticeable.

The Editorial Board and Global Journals Inc. (US) recommend the use of a tool such as Reference Manager for reference management and formatting.

Tables, Figures and Figure Legends

Tables: Tables should be few in number, cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g. Table 4, a self-explanatory caption and be on a separate sheet. Vertical lines should not be used.

Figures: Figures are supposed to be submitted as separate files. Always take in a citation in the text for each figure using Arabic numbers, e.g. Fig. 4. Artwork must be submitted online in electronic form by e-mailing them.

Preparation of Electronic Figures for Publication

Even though low quality images are sufficient for review purposes, print publication requires high quality images to prevent the final product being blurred or fuzzy. Submit (or e-mail) EPS (line art) or TIFF (halftone/photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Do not use pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings) in relation to the imitation size. Please give the data for figures in black and white or submit a Color Work Agreement Form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution (at final image size) ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs) : >350 dpi; figures containing both halftone and line images: >650 dpi.

Color Charges: It is the rule of the Global Journals Inc. (US) for authors to pay the full cost for the reproduction of their color artwork. Hence, please note that, if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a color work agreement form before your paper can be published.

Figure Legends: Self-explanatory legends of all figures should be incorporated separately under the heading 'Legends to Figures'. In the full-text online edition of the journal, figure legends may possibly be truncated in abbreviated links to the full screen version. Therefore, the first 100 characters of any legend should notify the reader, about the key aspects of the figure.

6. AFTER ACCEPTANCE

Upon approval of a paper for publication, the manuscript will be forwarded to the dean, who is responsible for the publication of the Global Journals Inc. (US).

6.1 Proof Corrections

The corresponding author will receive an e-mail alert containing a link to a website or will be attached. A working e-mail address must therefore be provided for the related author.

Acrobat Reader will be required in order to read this file. This software can be downloaded

(Free of charge) from the following website:

www.adobe.com/products/acrobat/readstep2.html. This will facilitate the file to be opened, read on screen, and printed out in order for any corrections to be added. Further instructions will be sent with the proof.

Proofs must be returned to the dean at dean@globaljournals.org within three days of receipt.

As changes to proofs are costly, we inquire that you only correct typesetting errors. All illustrations are retained by the publisher. Please note that the authors are responsible for all statements made in their work, including changes made by the copy editor.

6.2 Early View of Global Journals Inc. (US) (Publication Prior to Print)

The Global Journals Inc. (US) are enclosed by our publishing's Early View service. Early View articles are complete full-text articles sent in advance of their publication. Early View articles are absolute and final. They have been completely reviewed, revised and edited for publication, and the authors' final corrections have been incorporated. Because they are in final form, no changes can be made after sending them. The nature of Early View articles means that they do not yet have volume, issue or page numbers, so Early View articles cannot be cited in the conventional way.

6.3 Author Services

Online production tracking is available for your article through Author Services. Author Services enables authors to track their article - once it has been accepted - through the production process to publication online and in print. Authors can check the status of their articles online and choose to receive automated e-mails at key stages of production. The authors will receive an e-mail with a unique link that enables them to register and have their article automatically added to the system. Please ensure that a complete e-mail address is provided when submitting the manuscript.

6.4 Author Material Archive Policy

Please note that if not specifically requested, publisher will dispose off hardcopy & electronic information submitted, after the two months of publication. If you require the return of any information submitted, please inform the Editorial Board or dean as soon as possible.

6.5 Offprint and Extra Copies

A PDF offprint of the online-published article will be provided free of charge to the related author, and may be distributed according to the Publisher's terms and conditions. Additional paper offprint may be ordered by emailing us at: editor@globaljournals.org.



© Copyright by Global Journals Inc.(US)| Guidelines Handbook
the search? Will I be able to find all information in this field area? If the answer of these types of questions will be "Yes" then you can choose that topic. In most of the cases, you may have to conduct the surveys and have to visit several places because this field is related to Computer Science and Information Technology. Also, you may have to do a lot of work to find all rise and falls regarding the various data of that subject. Sometimes, detailed information plays a vital role, instead of short information.

2. Evaluators are human: First thing to remember that evaluators are also human being. They are not only meant for rejecting a paper. They are here to evaluate your paper. So, present your Best.

3. Think Like Evaluators: If you are in a confusion or getting demotivated that your paper will be accepted by evaluators or not, then think and try to evaluate your paper like an Evaluator. Try to understand that what an evaluator wants in your research paper and automatically you will have your answer.

4. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

5. Ask your Guides: If you are having any difficulty in your research, then do not hesitate to share your difficulty to your guide (if you have any). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work then ask the supervisor to help you with the alternative. He might also provide you the list of essential readings.

6. Use of computer is recommended: As you are doing research in the field of Computer Science, then this point is quite obvious.

7. Use right software: Always use good quality software packages. If you are not capable to judge good software then you can lose quality of your paper unknowingly. There are various software programs available to help you, which you can get through Internet.

8. Use the Internet for help: An excellent start for your paper can be by using the Google. It is an excellent search engine, where you can have your doubts resolved. You may also read some answers for the frequent question how to write my research paper or find model research paper. From the internet library you can download books. If you have all required books make important reading selecting and analyzing the specified information. Then put together research paper sketch out.

9. Use and get big pictures: Always use encyclopedias, Wikipedia to get pictures so that you can go into the depth.

10. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right! It is a good habit, which helps to not to lose your continuity. You should always use bookmarks while searching on Internet also, which will make your search easier.

11. Revise what you wrote: When you write anything, always read it, summarize it and then finalize it.

12. Make all efforts: Make all efforts to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in introduction, that what is the need of a particular research paper. Polish your work by good skill of writing and always give an evaluator, what he wants.

13. Have backups: When you are going to do any important thing like making research paper, you should always have backup copies of it either in your computer or in paper. This will help you to not to lose any of your important.

14. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several and unnecessary diagrams will degrade the quality of your paper by creating "hotchpotch." So always, try to make and include those diagrams, which are made by your own to improve readability and understandability of your paper.

15. Use of direct quotes: When you do research relevant to literature, history or current affairs then use of quotes become essential but if study is relevant to science then use of quotes is not preferable.

© Copyright by Global Journals Inc. (US) | Guidelines Handbook

16. Use proper verb tense: Use proper verb tenses in your paper. Use past tense, to present those events that happened. Use present tense to indicate events that are going on. Use future tense to indicate future happening events. Use of improper and wrong tenses will confuse the evaluator. Avoid the sentences that are incomplete.

17. Never use online paper: If you are getting any paper on Internet, then never use it as your research paper because it might be possible that evaluator has already seen it or maybe it is outdated version.

18. Pick a good study spot: To do your research studies always try to pick a spot, which is quiet. Every spot is not for studies. Spot that suits you choose it and proceed further.

19. Know what you know: Always try to know, what you know by making objectives. Else, you will be confused and cannot achieve your target.

20. Use good quality grammar: Always use a good quality grammar and use words that will throw positive impact on evaluator. Use of good quality grammar does not mean to use tough words, that for each word the evaluator has to go through dictionary. Do not start sentence with a conjunction. Do not fragment sentences. Eliminate one-word sentences. Ignore passive voice. Do not ever use a big word when a diminutive one would suffice. Verbs have to be in agreement with their subjects. Prepositions are not expressions to finish sentences with. It is incorrect to ever divide an infinitive. Avoid clichés like the disease. Also, always shun irritating alliteration. Use language that is simple and straight forward. put together a neat summary.

21. Arrangement of information: Each section of the main body should start with an opening sentence and there should be a changeover at the end of the section. Give only valid and powerful arguments to your topic. You may also maintain your arguments with records.

22. Never start in last minute: Always start at right time and give enough time to research work. Leaving everything to the last minute will degrade your paper and spoil your work.

23. Multitasking in research is not good: Doing several things at the same time proves bad habit in case of research activity. Research is an area, where everything has a particular time slot. Divide your research work in parts and do particular part in particular time slot.

24. Never copy others' work: Never copy others' work and give it your name because if evaluator has seen it anywhere you will be in trouble.

25. Take proper rest and food: No matter how many hours you spend for your research activity, if you are not taking care of your health then all your efforts will be in vain. For a quality research, study is must, and this can be done by taking proper rest and food.

26. Go for seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

27. Refresh your mind after intervals: Try to give rest to your mind by listening to soft music or by sleeping in intervals. This will also improve your memory.

28. Make colleagues: Always try to make colleagues. No matter how sharper or intelligent you are, if you make colleagues you can have several ideas, which will be helpful for your research.

29. Think technically: Always think technically. If anything happens, then search its reasons, its benefits, and demerits.

30. Think and then print: When you will go to print your paper, notice that tables are not be split, headings are not detached from their descriptions, and page sequence is maintained.

31. Adding unnecessary information: Do not add unnecessary information, like, I have used MS Excel to draw graph. Do not add irrelevant and inappropriate material. These all will create superfluous. Foreign terminology and phrases are not apropos. One should NEVER take a broad view. Analogy in script is like feathers on a snake. Not at all use a large word when a very small one would be

© Copyright by Global Journals Inc.(US) | Guidelines Handbook

sufficient. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Amplification is a billion times of inferior quality than sarcasm.

32. Never oversimplify everything: To add material in your research paper, never go for oversimplification. This will definitely irritate the evaluator. Be more or less specific. Also too, by no means, ever use rhythmic redundancies. Contractions aren't essential and shouldn't be there used. Comparisons are as terrible as clichés. Give up ampersands and abbreviations, and so on. Remove commas, that are, not necessary. Parenthetical words however should be together with this in commas. Understatement is all the time the complete best way to put onward earth-shaking thoughts. Give a detailed literary review.

33. Report concluded results: Use concluded results. From raw data, filter the results and then conclude your studies based on measurements and observations taken. Significant figures and appropriate number of decimal places should be used. Parenthetical remarks are prohibitive. Proofread carefully at final stage. In the end give outline to your arguments. Spot out perspectives of further study of this subject. Justify your conclusion by at the bottom of them with sufficient justifications and examples.

34. After conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print to the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects in your research.

INFORMAL GUIDELINES OF RESEARCH PAPER WRITING

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form, which is presented in the guidelines using the template.
- Please note the criterion for grading the final paper by peer-reviewers.

Final Points:

A purpose of organizing a research paper is to let people to interpret your effort selectively. The journal requires the following sections, submitted in the order listed, each section to start on a new page.

The introduction will be compiled from reference matter and will reflect the design processes or outline of basis that direct you to make study. As you will carry out the process of study, the method and process section will be constructed as like that. The result segment will show related statistics in nearly sequential order and will direct the reviewers next to the similar intellectual paths throughout the data that you took to carry out your study. The discussion section will provide understanding of the data and projections as to the implication of the results. The use of good quality references all through the paper will give the effort trustworthiness by representing an alertness of prior workings.

Writing a research paper is not an easy job no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record keeping are the only means to make straightforward the progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear

· Adhere to recommended page limits

Mistakes to evade

• Insertion a title at the foot of a page with the subsequent text on the next page

© Copyright by Global Journals Inc. (US) | Guidelines Handbook

- Separating a table/chart or figure impound each figure/table to a single page
- Submitting a manuscript with pages out of sequence

In every sections of your document

- \cdot Use standard writing style including articles ("a", "the," etc.)
- \cdot Keep on paying attention on the research topic of the paper
- · Use paragraphs to split each significant point (excluding for the abstract)
- \cdot Align the primary line of each section
- · Present your points in sound order
- · Use present tense to report well accepted
- \cdot Use past tense to describe specific results
- · Shun familiar wording, don't address the reviewer directly, and don't use slang, slang language, or superlatives
- · Shun use of extra pictures include only those figures essential to presenting results

Title Page:

Choose a revealing title. It should be short. It should not have non-standard acronyms or abbreviations. It should not exceed two printed lines. It should include the name(s) and address (es) of all authors.

Abstract:

The summary should be two hundred words or less. It should briefly and clearly explain the key findings reported in the manuscript-must have precise statistics. It should not have abnormal acronyms or abbreviations. It should be logical in itself. Shun citing references at this point.

An abstract is a brief distinct paragraph summary of finished work or work in development. In a minute or less a reviewer can be taught the foundation behind the study, common approach to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Yet, use comprehensive sentences and do not let go readability for briefness. You can maintain it succinct by phrasing sentences so that they provide more than lone rationale. The author can at this moment go straight to



shortening the outcome. Sum up the study, with the subsequent elements in any summary. Try to maintain the initial two items to no more than one ruling each.

- Reason of the study theory, overall issue, purpose
- Fundamental goal
- To the point depiction of the research
- Consequences, including <u>definite statistics</u> if the consequences are quantitative in nature, account quantitative data; results
 of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

Approach:

- Single section, and succinct
- As a outline of job done, it is always written in past tense
- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
- Center on shortening results bound background information to a verdict or two, if completely necessary
- What you account in an conceptual must be regular with what you reported in the manuscript
- Exact spelling, clearness of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else

Introduction:

The **Introduction** should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable to comprehend and calculate the purpose of your study without having to submit to other works. The basis for the study should be offered. Give most important references but shun difficult to make a comprehensive appraisal of the topic. In the introduction, describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will have no attention in your result. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here. Following approach can create a valuable beginning:

- Explain the value (significance) of the study
- Shield the model why did you employ this particular system or method? What is its compensation? You strength remark on its appropriateness from a abstract point of vision as well as point out sensible reasons for using it.
- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
- Very for a short time explain the tentative propose and how it skilled the declared objectives.

Approach:

- Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done.
- Sort out your thoughts; manufacture one key point with every section. If you make the four points listed above, you will need a least of four paragraphs.
- Present surroundings information only as desirable in order hold up a situation. The reviewer does not desire to read the whole thing you know about a topic.
- Shape the theory/purpose specifically do not take a broad view.
- As always, give awareness to spelling, simplicity and correctness of sentences and phrases.

Procedures (Methods and Materials):

This part is supposed to be the easiest to carve if you have good skills. A sound written Procedures segment allows a capable scientist to replacement your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt for the least amount of information that would permit another capable scientist to spare your outcome but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section. When a technique is used that has been well described in another object, mention the specific item describing a way but draw the basic

principle while stating the situation. The purpose is to text all particular resources and broad procedures, so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step by step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

- Explain materials individually only if the study is so complex that it saves liberty this way.
- Embrace particular materials, and any tools or provisions that are not frequently found in laboratories.
- Do not take in frequently found.
- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

Methods:

- Report the method (not particulars of each process that engaged the same methodology)
- Describe the method entirely
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures
- Simplify details how procedures were completed not how they were exclusively performed on a particular day.
- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

Approach:

- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
- Use standard style in this and in every other part of the paper avoid familiar lists, and use full sentences.

What to keep away from

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part a entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently. You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.

Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise remarks that are not accessible in a prescribed figure or table, if appropriate.

• Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or in manuscript form. What to stay away from

- Do not discuss or infer your outcome, report surroundings information, or try to explain anything.
- Not at all, take in raw data or intermediate calculations in a research manuscript.

© Copyright by Global Journals Inc.(US)| Guidelines Handbook

- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables there is a difference.

Approach

- As forever, use past tense when you submit to your results, and put the whole thing in a reasonable order.
- Put figures and tables, appropriately numbered, in order at the end of the report
- If you desire, you may place your figures and tables properly within the text of your results part.

Figures and tables

- If you put figures and tables at the end of the details, make certain that they are visibly distinguished from any attach appendix materials, such as raw facts
- Despite of position, each figure must be numbered one after the other and complete with subtitle
- In spite of position, each table must be titled, numbered one after the other and complete with heading
- All figure and table must be adequately complete that it could situate on its own, divide from text

Discussion:

The Discussion is expected the trickiest segment to write and describe. A lot of papers submitted for journal are discarded based on problems with the Discussion. There is no head of state for how long a argument should be. Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implication of the study. The purpose here is to offer an understanding of your results and hold up for all of your conclusions, using facts from your research and if generally accepted information, suitable. The implication of result should be visibly described. Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved with prospect, and let it drop at that.

- Make a decision if each premise is supported, discarded, or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."
- Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work
- You may propose future guidelines, such as how the experiment might be personalized to accomplish a new idea.
- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One research will not counter an overall question, so maintain the large picture in mind, where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

- When you refer to information, differentiate data generated by your own studies from available information
- Submit to work done by specific persons (including you) in past tense.
- Submit to generally acknowledged facts and main beliefs in present tense.

Administration Rules Listed Before Submitting Your Research Paper to Global Journals Inc. (US)

Please carefully note down following rules and regulation before submitting your Research Paper to Global Journals Inc. (US):

Segment Draft and Final Research Paper: You have to strictly follow the template of research paper. If it is not done your paper may get rejected.

- The **major constraint** is that you must independently make all content, tables, graphs, and facts that are offered in the paper. You must write each part of the paper wholly on your own. The Peer-reviewers need to identify your own perceptive of the concepts in your own terms. NEVER extract straight from any foundation, and never rephrase someone else's analysis.
- Do not give permission to anyone else to "PROOFREAD" your manuscript.
- Methods to avoid Plagiarism is applied by us on every paper, if found guilty, you will be blacklisted by all of our collaborated research groups, your institution will be informed for this and strict legal actions will be taken immediately.)
- To guard yourself and others from possible illegal use please do not permit anyone right to use to your paper and files.



CRITERION FOR GRADING A RESEARCH PAPER (COMPILATION) BY GLOBAL JOURNALS INC. (US)

Please note that following table is only a Grading of "Paper Compilation" and not on "Performed/Stated Research" whose grading solely depends on Individual Assigned Peer Reviewer and Editorial Board Member. These can be available only on request and after decision of Paper. This report will be the property of Global Journals Inc. (US).

Topics	Grades		
	А-В	C-D	E-F
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

© Copyright by Global Journals Inc. (US) | Guidelines Handbook

INDEX

Α

 $\begin{array}{l} \mbox{Accessible} \cdot 14, 46 \\ \mbox{Accorded} \cdot 45, 46 \\ \mbox{Addison} \cdot 37 \\ \mbox{Analysis} \cdot 28, 40, 54, 66 \\ \mbox{Approach} \cdot 1, 3, 4, 5, 6, 7, 8, 10, 12, 13, 14, 16, 18, 20 \\ \mbox{Attestation} \cdot 49 \\ \mbox{Automotive} \cdot 73 \\ \mbox{Awareness} \cdot 54 \end{array}$

В

Boundary · 23, 24

С

Categories \cdot 25, 27 Comparitive \cdot 1, 3, 4, 5, 6, 7, 8, 10, 12, 13, 14, 16, 18, 20 Contingency \cdot 60, 64, 69 Contribute \cdot 59, 60, 62, 64, 66, 67, 69, 71, 73

D

Deliberative \cdot 17 Designed \cdot 11, 12, 24, 40, 52, 54, 64 Dimensionality \cdot 23, 24

Ε

 $\begin{array}{l} \text{Emphasis} \cdot 1, 20, 22 \\ \text{Emphasizes} \cdot 53 \\ \text{Execute} \cdot 31, 33, 34 \end{array}$

F

Fabricating · 11

G

Gateway \cdot 46, 47, 48, 52 Governance \cdot 40, 41, 42, 43, 44, 46, 50, 52, 53, 54, 56 Guidelines \cdot 20, 47, 54

Η

Horizontal · 50 Hybrids · 61, 69, 72

I

Inclination \cdot 66, 67 Invention \cdot 5, 7, 8, 10

L

Logarithmic · 1, 4, 6, 7

М

 $\begin{array}{l} \mbox{Mainframe} \cdot \ 1, \ 8 \\ \mbox{Mexico} \cdot \ 56, \ 59, \ 60, \ 61, \ 62, \ 64, \ 65, \ 66, \ 67, \ 69, \ 71, \ 72, \ 73 \\ \mbox{Microprocessor} \cdot \ 1, \ 8, \ 11, \ 12, \ 16 \\ \mbox{Molecules} \cdot \ 19 \\ \mbox{Monocrystalline} \cdot \ 61 \\ \mbox{Motherboard} \cdot \ 1, \ 13 \end{array}$

Ν

Nanotechnology · 1, 18, 20 Nanotechnology · 16, 18, 20

0

Operating • 14, 31 Opportunities • 59, 60, 62, 64, 66, 67, 69, 71, 73 Optimized • 31, 33, 35, 36, 37, 39 Overview • 65

Ρ

 $\begin{array}{l} \mbox{Peripherals} \cdot 8, 13, 18 \\ \mbox{Photovoltaic} \cdot 59, 60, 61, 65, 66, 67, 68, 69, 71, 72, 73 \\ \mbox{Predominant} \cdot 43 \\ \mbox{Preemptive} \cdot 33, 36, 37 \\ \mbox{Provident} \cdot 52 \\ \mbox{Provides} \cdot 12, 20, 23, 24, 25, 27, 35, 46, 56, 61 \\ \mbox{Purified} \cdot 59, 60, 73 \end{array}$

Q

Quantum · 1, 18, 19, 33, 34, 36 Quickly · 2, 8, 10

R

Recommended · 62, 65, 67, 68, 69, 72 Renewable · 59, 61, 62, 64, 72 Resolving · 72 Retrieved · 56

S

Scheduling • 31, 32, 33, 34, 35, 36, 37, 39 Simulation • 35, 59, 65, 66, 67, 68 Solvency • 27 Sustainable • 59, 60, 62, 64, 66, 67, 69, 71, 73 Switches • 7

T

 $\begin{array}{l} \mbox{Tabulating} \cdot \ 6 \\ \mbox{Technological} \cdot \ 59, \ 60, \ 62, \ 64, \ 66, \ 67, \ 69, \ 71, \ 73 \\ \mbox{Transistors} \cdot \ 1, \ 7, \ 10, \ 14, \ 16 \\ \mbox{Transparency} \cdot \ 40, \ 42, \ 43, \ 44, \ 46, \ 52 \\ \mbox{Vertices} \cdot \ 9 \end{array}$

U

Utilization · 31, 33, 53

V

Vacuum · 1, 7, 10, 14 Vancouver · 29 Various · 22, 40, 62 Vector · 22, 23, 24, 25, 27, 29, 30



Global Journal of Computer Science and Technology

Q:

Visit us on the Web at www.GlobalJournals.org | www.ComputerResearch.org or email us at helpdesk@globaljournals.org



ISSN 9754350

© 2012 Global Journal