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Location based Systems

Survey on Precision Farming

Highlights

Approach for Online Food

Internet and Pump Set Control

Discovering Thoughts, Inventing Future

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An Innovative Approach for Online Food Order Management System

By Anjali Baranwal, Anshika Srivastava & Bindu Rani

Abstract- Restaurants are one of the favorite premises. An online food ordering is a integrated process in fast food Restaurants to offer choice of food from menu, cooked and served or packaged hot to satisfy customer to immediately make orders on their ownselves. Customers can also call the restaurant to pack in advance or to deliver the food item but sometimes restaurants run out of certain items. The existing system lacks the feature to use Remote GPS tracker such that restaurant managers are auto updated about the location of the customer before reaching the restaurant. We propose a complete system to easily manage online menu where items update as per the availability of food and prices. The Customer views the products, register and place the order. The system administrator adds and manages user accounts and the Manager manages product and orders. The Kitchen meal deliverable deals with pending deliveries .The proposed system is developed using Android platform which is open source software and built in data connection modules. It also decreases labour rates to replace mobile phones to book order and table unlike employees who come to take order and payments. In advent of food consumption problems like obesity, overeating etc., he proposed system will show food items with nutrition based searches showing ingredients of the food items.

Keywords: *food ordering system, GPS, PDA, smart phone/tablet, SMS, trackpads.*

GJCST-H Classification: *H.3.5*

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I. Introduction

In the proposed system both the owner and he customer will find it easier to eliminate manual operations like ordering food and providing bill. There is also chance of minor errors and it also takes time. It aims to implement online orders helping customers to wirelessly order food using E-menu sending I straight to the cook-room. The server fetches the order and compile the data based category. Starters and main course orders are usually taken together. Drinks and desert orders may be taken separately. Kitchen staff sees the dish orders on their screen. There is a status shown at the client table which updates customer the time when the cook in the kitchen gets the order, starts preparing food till food served at the customers table [1].

The categories of users include Customers to order food and pay in return, Chef who gets the placed order and cooks the ordered food and if cook has not started cooking means action to cancel the order may be taken by the manager. Another category include Admin who adds, cancels, alters the order placed by the customer, manages the staff also .Staff include waiters and helpers who help in restaurant management.

The objectives include reducing the paper work.It automates the whole process incuding transactions and customer management.Also faster retreivel of records with less overhaed to manage user friendly and flexible records in files and papers. The general objective include to stand out from others in food industry. Specifically providing customized menu, Status check if the order was placed correctly Reduction in food wastage, more accurate system with faster servicing, more customers and huge profits. Also Restaurants know what food items the customers want in advance, eliminate long queues shortened purchase time and more secured order placement process. It also eliminates the difficulty in tracking past history as all bookings at a user account get saved easily. Also the feedbacks are recorded from each user account to get deliver better services. There is no need for restaurants to answer calls to take the orders. Customers can easily scroll menus, add more orders to order list.

Fig. 1: Working of android devices and wireless order track

The different modules in this proposed system are as follows:

1) Module -1 (USER Tablet)

Category of customer-Normar day to day customers. Firstly customer will do an online registration and based on account login all details are stored in

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central database of the customer wher he/she can place in orders, give necessary feedbacks, pay money.

2) Module-2(Manager's Tablet)

This screen is generally for the use of manager of restaurant. The manager will be able to control the whole activity of the restaurant from a single screen/desktop. He should be able to make any changes to the enu using the Tablet /Laptop. Manager can also make modification in price of food item concerning its demand and market.

3) Module-3(SMS Integration)

At the time of registration customer has to enter their Phone number and other detail which will be stored in the restaurant database. So that when any new offer or extra credit information can be send to the customer through the sms to attract them towards the restaurant.

4) Module-4(Menu Recommendation)

When customer selecting food item the on the basis of their previous food order other food item are recommended which customer can also select for the order.

5) Module-5(Customer Feedback)

This module provide the customer to give their feedback regarding our food and services and what make customer more happier with the restaurant.

6) Module-6(Report Generation)

System will generate complete report on week montly and yearly basis.

This application consists of three different applications. Through this proposed application, customer can search. For restaurants looking for a suitable meal, rating ,other previous customers choice ,price, quality and quantity of food of food. After clicking a restaurant, customer views a digitized menu and thus select items by using check boxes. Once the order confirms, customer proceeds to pay. Customers can also book their tables in advance before they reach. Using animated 3D-view, customer views the sitting arrangement of tables in a restaurant[2].

The second application is useful for the kitchen cooking chef units of restaurants. The Kitchen staff can view placed details of current orders, cancelled orders and table numbers which are waiting . After a customer goes for payment to a particular restaurant, all the information is fetched by the central working database. Kitchen staff receive the necessary information which they require. Using these details, kitchen staff easily can proceed to their work.

The third application is useful for the managers at restaurants where they are sent notifications when a customer selects item ,orders and makes payment to the restaurant. Further, manager can update sitting arrangement of tables in the restaurant, if there comes a change. Managers may also easily updates the menu, if there have been any update or add in the ordered meal, prices or quantity.

a) Registration

Customers are aided with the facility to easily register themselves upon which the customer gets his own profile/account, with profile customer can look back his previous transactions, and also give feedbacks in the form of stars or rating, and also personalize their accounts by adding diet control charts.

b) Suggestion

We made useful recommended user friendly algorithm that suggests matching dishes based on previous orders, diet controls. It is easier for the customer to get order and view more liked dishes and/or offers that other customers prefer in the restaurant. Moreover, various dimensional filters according to taste and preferences like price, taste, diet habits, quantity, etc. are added to suit the taste of customers.

c) Related Work

In Today scenario restaurant system is paper based. Menu cards in the restaurants are paper based an waiters use to write orders on the paper. There is always a chance for paper based record is to get damaged or lost due to fire or say accidents. This all includes wastage of time, money and paper .Small changes in menu require to reprinting of all menu cards. Customer needs to wait till attender comes to take the order, also customer calls the attender a number of times or might be possible that customers is served undesired food item due to misinterpretation by the waiter.

II. Literature Review

a) Previous Food Ordering Process

i. *Full Servicing Restaurant*

Previously food ordering process used in most full-service restaurants where a waiter brought the menu to the customer, and customer see through the menu and order their selected food items. The whole process requires that customers come to their restaurant and then assist the restaurant waiters to bring the food .And the complete food ordering system is a paper based system where customers go through the paper based menu and give the which is noted by attender on the paper. But the paper based system doesn't provide any dynamicity to the ordering system, time cosuming process and require enough amount of human effort.

ii. *Self Servicing Restaurant*

In this process customer has to go to the counter and give the order of food item by seeing the paper based menu or graphical posters. For this

process customer has to decide earlier before going to the cash counter.

iii. *Automated food Ordering System*

Development of multitouch technology made possible to run food ordering application.

iv. *Multitouch Technology*

Multi-Touch technology works with TrackPad (or TouchPads) and touch-screen interfaces, like those found on laptops, smartphones and tablets. It allows users to interact with their devices in a multitude of ways, by expanding the number of interface options. Rather than simply swipe and tap, Multi-Touch allows for zooming, Automatic system reduces the service cost and provide dynamicity to make changes which enhances the customer experience. The automatic system used to search the restaurant book the table or order the food through the electronic touch screen devices like phones, tablets or laptops which present you the booking option and menus. First customer can book the table or choose the home delivery and select the food item to order and make payment. The Touch screen device present the menu and the customer gives the input of food items. Then the technical team passes this ordered item detail to the kitchen through the waiter. A customer who ordered for home delivery can track the delivery option. And if customer booked the table on his arrival within a certain time limit their food to be served. Also Finance department can manage the sell and purchase through the application.

With the improvement in computer technology and advancement in devices like scrolling, selecting, and more. It is designed to provide touch-screen interfaces with the same sort of flexibility and usability that a traditional mouse and keyboard provide, while also providing for a more intuitive and seamless user experience.

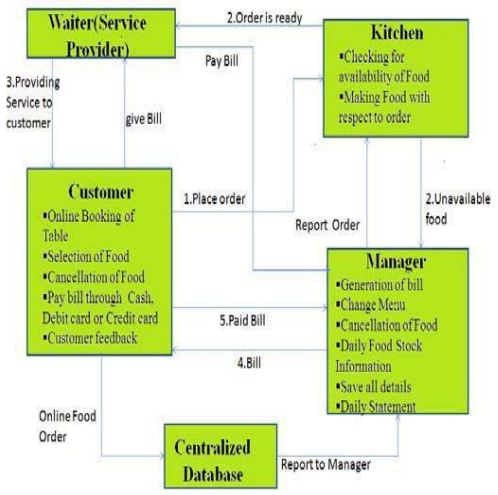

Fig. 2: System flow diagram

III. System Architecture

The architecture consists of the three main parts of restaurants which is Server, Kitchen, and Cashier counter. Catering orders from customers online to the Kitchen staff to prepare that particular order in minimum time. Keeping track of the orders placed and fetched information into the server application. Order updates, cancellations, add ons are detailed at a central database. The above tiers of the system are connected via wireless technology. Food Android application finds out the location based on latitudes and longitudes.

IV. System Modules and System Design

Owners to manage the application will log in to the system ,update the details of the food like GST rate hikes ,better surplus, free discounts .Generally Festive season brings out a wide variety of catering add on such as to invite more customers and more huge profits. Different categories of food and different interests of customer find a better choice to get huge customer. Customer selects a list of items in order, and can easily add one or more items in no time ,can easily cancel items which is not required and find a good choice. The customer can click to view the order status and can easily cancel the order. Customer feedback are stored to provide the customer with the best services.

V. System Specification

a) Table Booking

It will allow customers to book table of his/her choice in advance by browsing the animated view of the restaurant accordingly.

b) Customer Feedback

Customer owner can easily analyse the changes if needed and can check on the quality of service.

c) Click-and-Add Menu

Customer can browse for a food item according to name, nutritional value, price, category etc. He/She will click on the food item to add it to the menu item.

d) Offers for Customer

Seasonal discounts, Free surplus food items are displayed to the customer will ordering to help in getting food at a reasonable cost.

e) Attractive Profile

The images of food items to make good and clear view of food to the customer about the food which is to be ordered.

f) Time to Serve

The manager easily calculates the time the customer will take to reach in a way provides ease to the customer to get food served as soon as possible.

g) Find Friends

Customer can easily search nearby friends in order to encourage more customers to the particular restaurants.

h) Diet Count

The Diet count, nutritional count, calorie intake, sugar intake is recorded in the customer account. It allows alert notification to the health conscious customers at their login account to take care of customer health.

Operating-Environment

Android based Operating system is an open source operating platform with programmers aiming to make it more better. Thus, Android is one of the fastest growing technology in the market with Android phones in every customers pocket making Android more secured. It brings more refined interface designs to suit in the interaction with the customers . Apple charges people who want to develop applications for the App store $100/year, while Google only charges Android developers $25. So android prevails.

VI. Scope and Limitation of Project

Restaurant Food Ordering and Billing System is an integration of different operations: ordering, pricing and billing systems. Customer input orders directly into the computer system, which communicates the customer's order directly to the Kitchen. The fixed terminal number identifies which customer ordered items and Staffs print bill of the food order. Additional orders may have to be cancelled by the kitchen only if the bill hasn't been Printed. The other limitations include the user must be Computer Literate. There should be LAN/WIFI.

VII. Future Enhancement

Anything cannot be ended with a single step. It is the fact that nothing is permanent in this world. So the utility requires to have some future enhancement's in the evergreen and booming in the IT industry. Change is inevitable. The project entitled "Online Food Ordering System" is successfully designed developed and tested. The system and the architecture should a compatible one.

VIII. Conclusion

Thus, we propose an automated food ordering system with features of feedback and wireless communication. This system is convenient, effective and easy thereby improving the performance of restaurant's staff. It will also provide quality of service and customer satisfaction. Thus, the proposed system would attract customers and also adds to the efficiency of maintaining the restaurant's ordering and billing section.

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Privacy in Location based Systems

By Kalesanwo Olamide
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Abstract- Recent advancements in technology have opened new avenues for services like the Location based services. Location based services are applications of mobile technology that utilize the information about the location of the user. It uses the Global Positioning System GPS to acquire and transmit user location. Billions of people create an unprecedented amount of data that either includes or allows the inference of highly sensitive information amidst which user location is one of them. However, this information is shared with third party without the knowledge or consent of the user. This is a violation of privacy as some users will or may not want to disclose their location to some people. This paper aims to raise awareness about privacy issues created as a result of location based services. History of location based services were discussed, information privacy and privacy issue surrounding the location based service were also discussed. Despite the myriad opportunities location based services provides, it is required to ensure security of user's private data, and data protection laws be put in place to enforce this.

Keywords: *information, location based system, privacy, technology.*

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I. Introduction

The Internet has fundamentally changed our society, the way we live, work and express ourselves. Improvements in information processing and communication technology have created mobile devices that allow the usage of smart mobile services, such as applications, that keep us constantly connected and that deliver digital content. Millions of such mobile service are available today. While being inexpensive in terms of actual money, user data has become the actual currency, rewarding the company that knows the most about their users. This has created an eco-system, which invisible during normal usage, records virtually every action online. The recorded data fuels sophisticated artificial intelligence algorithms that learn our interests, desires and secrets for purposes such as behavioural advertisement and surveillance (Chow & Mokbel, 2016).

At the beginning of the 21st century the Internet fundamentally changed. Instead of simply consuming content, users started to create the content themselves and to use interactive and collaborative services. This development, commonly referred to as Web 2.0, has significantly influenced our society. People spend a substantial amount of their time in online social networks communicating, socializing, engaging in their hobbies or expressing their opinions(Michael, 2016). Events all around the globe are almost instantly reported via instant messengers and hundreds of thousands collaboratively create and maintain large online encyclopaedias.

During the last decade, mobile devices, such as smartphones and tablet computers, have further increased the ubiquity of online services. Engagement in online communications or purchase of items online are done at home, on a desktop computer, at any instance of time. Furthermore, sensors of mobile devices, such as Global Positioning System (GPS) sensors are employed. This does not only allow engagement in context aware services, but also increases the types of information that can be created, transmitted and stored at remote machines.

A consequence of these developments is that billions of people create an unprecedented amount of data that either includes or allows the inference of highly sensitive information. Either way, it turns out that the entity that learns such information can use it in an extremely profitable way. The services that know more information about people are able to optimize their services and thus attract more users. Furthermore, services that know more about the interests of their users are able to present them behavioural advertisement(Scassa & Sattler, 2013). In this particular form of online advertisement, online advertisers present targeted adverts that relates to the user's online activities. In a simple example, a user who was recently shopping online for cloths would receive matching advertisement where other users would see different advertisement. Today, a multi-billion dollar economy exists whose main driving factor is user data. Users are typically unaware of the exact functioning of this industry. They are not aware of, for example, the multiple trackers that they download when visiting webpages or the Advert and Analytics (AA) software that they run on their mobile devices. They are also not aware of how their data is collected, aggregated and processed in economic transactions(Hoofnagle, King, Li, & Turow, 2010). These data collected based on user's location are used to provide services for users hence the name, location based services.

This research is tailored towards addressing the ethical issues as regards the privacy of users when using online mobile services. Section 2 discusses Information privacy, the historical background of Location based services was discussed in section 3, positive use of location based services as well as

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location based services and privacy issues were discussed in sections 4 and 5 respectively. The final section concludes the paper.

II. Information Privacy

There are many definitions and aspects of privacy but information privacy has received considerable attention during the last decades (Chow & Mokbel, 2016). Matthew 7:1-12 gives account of the Transfiguration. Jesus had to select few people (Peter, James and John) he wanted to share information with. In verse 9, he strictly instructed them not to share the information with any other person. This is a typical depiction of information privacy. Information privacy is the study of the field between the massive data dissemination/collection/processing and the legal/ political/technological issues surrounding them. It has significant impact on the way people live in the information age(Hartin, 2012). The question of how we shape our society in the information age is extremely challenging(Solove, 2002). One of the first discourses on information privacy is Warren's and Brandeis's work on The Right to Privacy(Chow & Mokbel, 2016; Warren & Brandeis, 1890). Concerning the technology that allows instant photographs and its meaning to the privacy of society, the question how the law is supposed to protect the peoples' privacy was raised(Warren & Brandeis, 1890). It was argued that people have the right to be left alone, i.e. the freedom from interference. There are, however, other scholars that have a different school of thought from Warren & Brandei's view. They defined privacy as the right of individuals, groups, or institutions to determine when, how, and what degree of information about them is to be communicated with others (Boguslaw & Westin, 1968).

While the described technological advancements have brought society numerous advantages, their threats to information privacy cannot be doubted. Nowadays, billions of people constantly create data while they browse the web, use online social networks or employ their mobile devices. The latter are typically equipped with several sensors allowing to process not only virtual activities, such as clicks in apps, but also to process physical location, audio, video and so on(Anuar & Gretzel, 2011). It is easy to see that processing such data is a very delicate matter as it allows to gain very sensitive insights in the private lives of the users. With an estimated 50 billion devices on the Internet in 2020, the world is becoming a global environment in which virtually every electronic device is able to communicate to any other device.

People need to reveal some basic information such as residential address, bank account information, tell friends about weekend plans and many more. Information privacy is therefore a relational concept that depends on the entities involved, such as close friends, family, employers, service providers and government agencies. There is a broad consensus that privacy is valuable and beneficial at an individual, group, organizational and societal level, where the individual and the societal level have received most attention. It is essential for an individual to decide which information about herself in which situations should be revealed.

Intimacy is constituted and signalled by the information that people choose to share with another. People create different levels of intimacy and trust depending on the personal information they disclose. People create intimacy on the basis of what experiences they share with each other. However, this would not be possible without privacy. People need personal space, and thus privacy, in order to separate themselves from others. Removing that space leads to hostility and unease. Two values of information privacy were enumerated (Chow & Mokbel, 2016). First, preventing misuse of personal information since the individuals are able to control their own information. Second, avoiding embarrassment for actions that are perfectly normal, yet, when exposed to the public, are considered to be embarrassing.

III. History of Location Based System

Location based services were first introduced with Enhanced911 (E-911), an initiative of the US Federal Communications Commission (FCC) to make all wireless phones location capable. The goal was to enable emergency services to quickly and accurately determine the location of a call placed using a cell phone and to deliver the location information to the closest Public Safety Answering Point (Federal Communications Commission (FCC), 1999). Operators of mobile services began to introduce commercial location based services in order to gain return for their E-911 investments. These initial developments were characterized by finder services, where information was sent to a user upon request (e.g. finding a restaurant or a tourist attraction). As a result of poor design, limited precision and reduced functionality, these services failed to gain popularity.

Significant changes in location-based service technologies were made possible by the development of low powered GPS-enabled mobile phones and assisted GPS, as well as the introduction of the 3G broadband wireless services. Better location based services, such as real-time mapping, points-of-interest content or navigation support, could be offered with the advent of new GPS-enabled mobile phones and devices, which support high accuracy positioning. These improvements led to the next generation of location-based services, which facilitated the delivery of mundane services at the push of a button (i.e. calling a taxi to the user's location without dialling a service

operator), or allowed a user's location to trigger the sending of information to the mobile device.

One of the reasons why location-based services have gained in popularity is the shift from a reactive to a proactive system. While a reactive system simply responds to a user's location, a proactive system allows users to register their interests and/or preferences. Based on this information, the proactive system will automatically push relevant content to the user. In a location-based system, this might include notifying users when they are approaching points of interest. These proactive systems require less input from the user, yet deliver a wide range of information. These systems require a constant tracking of the mobile device to enable an efficient supply of information.

Another recent development is the emergence of cross-referencing services, where the user and the target for information are not always the same. This service takes information from one user in order to serve another. For example, in May 2011, it was reported that TomTom, a manufacturer of portable satellite navigation systems, was selling anonymi zed data collected from its high-end navigation devices to authorities throughout Europe, U.S. and Canada, to be used for traffic control purposes (Scassa & Sattler, 2013).

The multifunctional nature of GPS equipped smart phones adds to the complexity of location information capable of being shared. This includes cell phone camera functions that geo-tag photographs. Accelerometers, a type of sensor that is increasingly common in mobile devices, are capable of measuring acceleration, tilt and orientation, and thus have the potential to increase the fine detail of the location information that is being gathered. Transportation systems can also make use of and gather data from GPS-enabled mobile phones on board vehicles in order to estimate the traffic flow on roads and highways.

Location-based services continue to evolve as new technological capabilities become widely available and highly affordable. One example is the availability of location sensitive billing services, where certain service providers can automatically charge a user when using their service, such as road tolls.

Research is being conducted on applications with augmented reality features, which would enable a mobile phone equipped with a camera, a compass and a GPS to superimpose information about points of interest on a live camera view, based on the phone's current position, orientation and the direction in which the camera is pointing (Scassa & Sattler, 2013).

IV. Positive use of Location based System

The potential for the development of location-based services is virtually limit- less and may extend into every sphere of human endeavour. An obvious benefit brought by location based services is the ability to filter vast amounts of content available over the Internet, and to deliver to the user only information in which may be of interest. For example, a simple query for a pharmacy would not return all registered pharmacies for the user to sift through until user finds the pharmacy closest to his/her location. The location-based service would return information related to only those pharmacies in the user's immediate vicinity. Location-based services also serve the user by pushing information such as discounts or coupons, alerts of risks when entering a high-crime district, or warnings before encountering a traffic jam on the highway. Furthermore, by sharing location information, all users benefit from more current localized information. Mobile devices connected to location-based services can also assist in finding missing persons (Scassa & Sattler, 2013).

Location awareness may also permit a variety of health and emergency management benefits. For example, the Virtual Blood Bank Project in Delhi, India uses smart phones to build a pervasive network capable of giving users instantaneous information about available blood donors in their vicinity, which may be critical in emergency situations. Other health care applications may include the ability to transmit critical health related information to a hospital along with the patient's location and estimated time of arrival to the emergency room, allowing the hospital to make all necessary preparations before the patient's arrival.

V. Location based Services and Privacy Issues

Multiple trackers are used to identify user location as they visit the web and use other smart devices. Location based technologies are technologies capable of providing services personalized to the geographic location of a user based on a given handheld device for a particular purpose (Anuar & Gretzel, 2011). Location based services offer information about a user's whereabouts and personal location to entities other than the user. With the proliferation and widespread adoption of mobile telephony and data, service providers have been eager to exploit customer information they have acquired over time. User location has traditionally been difficult to pinpoint and use due to its inherent dynamism and unpredictability(Michael, 2016). The rise of new technologies integrated into lightweight mobile devices and terminals, pinpointing location already a reality.

Location-based services are proliferating largely due to the dramatic rise in the number of GPS-equipped mobile devices used by consumers. Such devices include smart phones, tablet computers and hand held Global Positioning Systems (GPS). Newer versions of

internet browsers are also "location aware", facilitating the use of location information in tailoring the user's web experience.

There is no doubt that many location-based services offer real benefits to users. Yet location-based services raise inevitable user privacy concerns. These concerns operate on multiple levels and involve many players (Scassa & Sattler, 2013).

Despite the enormous application potential introduced by LBS for enhancing safety, convenience, and utility in our daily lives as well as our vacations, LBS also raise myriads of privacy issues due to the ability to collect, store, use and disclose the locations of users(Wang & Loui, 2009). Some of the dimensions that assess individuals' concerns for privacy are (1) the collection of personal information; (2) unauthorized secondary use of personal information; (3) improper access to personal information; and, (4) errors in storing of personal information. While privacy issues are a general concern for Internet services and mobile apps, people are especially wary of location information being abused (Michael, 2016).

LBS offer real-time navigation software, social networks that allow customers to check in as they go from place to place, local weather, geographically targeted search engine results, and other useful functions. The geolocation data is gathered in a number of ways-through global positioning system (GPS) technology built into devices, IP addresses, or Wi-Fi network mapping.

Proverbs 25:9 provides the following advice: "Argue your case with your neighbour directly, and do not disclose another's secret" (Proverbs 25:9). This verse is explicit with regard to respecting another's privacy. Not only is it understood in this verse that one is entitled to privacy, but the act of breaching another's privacy is openly censured(Glass & Cahn, 2017).A 2010 survey conducted for Microsoft in the United Kingdom, Germany, Japan, the United States, and Canada found that 94 percent of customers who had used location-based services considered them valuable. However, the same survey found that 52 percent were concerned about the potential for loss of their privacy through the use of geolocation data(Roxin, Gaber, Wack, Nait, & Moh, 2012).Among the privacy concerns related to location-based services are; Notice: Customers want to receive adequate notice that an app will collect and use their geolocation data and give their consent for it to do so; Control: Customers want to have access to and be able to limit the collection and use of their data; Retention: Customers want to be informed about the policies that govern the retention of their data; Reuse: Customers want to choose how their data will be used and how it might be combined with other data; Disclosure to third parties: Customers want to control how their data is shared with third-party apps.

Location-based services may also result in the collection of a new layer of personal information about consumers by private sector companies. Information about individuals and their movements has meaningful commercial value, and the potential for the collection, use and disclosure of this information is significant.

VI. Conclusion

The proliferation of location enabled mobile devices in the hands of consumers has led to a rapid development of location based services. The collection, use and disclosure of personal location information via these services raises serious privacy concerns, particularly given the sensitive nature of location information. A complaint-driven approach alone is not sufficient to ensure adequate protection of consumer privacy. There is need for data protection laws to further improve the legislative framework. As with many other services delivered through wireless communications, there are significant issues around how the informed consent requirements of data protection legislation can be effectively met. Appropriate norms for notice and consent to data collection in online and mobile environments would be of great importance. Although location-based services may offer attractive and beneficial opportunities to consumers, they do pose significant privacy risks. Because of the sensitive nature of location information, these risks may translate into significant material, moral and even physical harm. This is an area that calls for clear, proactive policy guidance and strong enforcement measures.

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Internet of Things (IOT) based Irrigation System with and without Internet and Pump Set Control

By Chandanita Thakur, Shaguftha Taskeen, Pavithra S, Monisha S, Namratha KS & Minnie Peter

Abstract- Agriculture is assumed to be a fundamental job in the improvement of a farming nation. In India about 70% of population rely on cultivation and 33% of the country's capital mainly originates from cultivation. Problems concerning agricultural business have been neutralizing the improvement of the nation. The main solution for this issue is by rationalizing the current conventional techniques for agribusiness. Thus, the propound goes for making agriculture ingenious by utilizing computerization and IOT advances.

For agricultural purposes, it is important that the information about field requirements, for instance, air and soil conditions, amount of underground water, wind speed and other appropriate conditions, rapid and powerfully available for use by agribusiness management systems, by experts, or the farmer itself in deciding processes. This system aims at making irrigation advanced using IOT and automation technologies.

Keywords: cultivation, agricultural business, water pump, GSM/GPRS, efficiency, dry run, pump-set theft.

GJCST-H Classification: C.2.m

Strictly as per the compliance and regulations of:

Internet of Things (IOT) based Irrigation System with and without Internet and Pump Set Control

Chandanita Thakur [α], Shaguftha Taskeen [σ], Pavithra S [ρ], Monisha S [ω], Namratha KS [¥] & Minnie Peter [§]

Abstract- Agriculture is assumed to be a fundamental job in the improvement of a farming nation. In India about 70% of population rely on cultivation and 33% of the country's capital mainly originates from cultivation. Problems concerning agricultural business have been neutralizing the improvement of the nation. The main solution for this issue is by rationalizing the current conventional techniques for agribusiness. Thus, the propound goes for making agriculture ingenious by utilizing computerization and IOT advances.

For agricultural purposes, it is important that the information about field requirements, for instance, air and soil conditions, amount of underground water, wind speed and other appropriate conditions, rapid and powerfully available for use by agribusiness management systems, by experts, or the farmer itself in deciding processes. This system aims at making irrigation advanced using IOT and automation technologies.

The highlighting features of this project include controlling of water pump with/without internet through GPRS/GSM and status notification of the water pump. It also detects dry run condition i.e, Usually pump set is used for ground water levels, when the pump is on and the ground water levels is very low or if the pressure of the water decreases, there are chances for motor damages which is known as dry run, and pump set theft control of water pump i.e, An obstacle sensor is placed below the soil so when the pump-set is moved the sensor automatically sends the alert message to the farmer through android app.

Keywords: cultivation, agricultural business, water pump, GSM/GPRS, efficiency, dry run, pump-set theft.

I. Introduction

Agriculture is treated as the foundation of life for the living species as it is the only source of food granule and other organic materials, as it plays crucial role in the growth of country's wealth.

In this case, new technologies emerge bringing computerized, continuous and intuitive features for communication through messaging applications [1].

It also provides large ample employment opportunities to the people. Growth in agricultural sector is necessary for the development of economic condition of the country [2]. Sadly, most of the farmers are still following the orthodox methods in irrigation which leads to low yielding of food grains and other agricultural products [2]. By implementing computerized method in irrigation and also using advanced automatic machines the yield has been improved compared to the manual methods [3].

In this project we can control water pump with/without internet through GPRS/GSM and status notification of the water pump.

A lot of embedded systems have unique designs according to their functions and behaviour. This system is composed of a microcontroller, LCD, GPRS, Dry run sensors (dryness detection of soil) and water pump.

The microcontroller which is located at the middle of the block diagram controls the entire project.

The same microcontroller is embedded as a program which takes required actions based on the inputs given.

Microcontroller will detect the current status of the water pump and it will automatically update on the cloud server. As and when farmers enter the login ID and password in android application, it will direct to the new window in the current status of the water pump. Water pump can be controlled using IOT or GSM.

Dry run sensor in microcontroller is usually placed at end of the pump. When motor is running and there is less water runs through pipe of the pump, we use dry run sensor for monitoring purpose. After getting signal from dry run sensor, microcontroller will send the alert to the farmer through GSM and parallely Android Application will update on Cloud Server through GPRS

II. Literature Survey

a) Existing System

At present there is emerging global water calamity where Managing shortage of water has become a unexciting job and there are dispute between users of water. This is a period where human consumption and contamination of water resources have crossed the levels which lead to scarcity in food production and has low down the ecosystem. The vital cause for these constraints is the speedy increase in population than the production of food and after years this population may rise up to 3-4 billion [2].

This extension can be seen in countries which have scarcity of water resources and are economically backward. Because of increase in population there is a huge pressure to raise food production by 50% in the next half century to maintain the capital. Many farmers still use the long-established discipline of farming, being unaware whether the water pump is ON or OFF [4].

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The farmers lack knowledge about dry run sensors, the only remedy to this problem is smart agriculture by rationalizing the long-established methods of agriculture. The present summary of water levels, staling of rivers, streams and tanks, uncertain environment avail a sore necessity for proper utilization of water. To subsist with this, temperature and dampness sensors are placed at suitable locations for observing the crops [1].

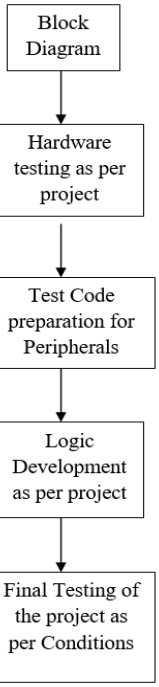
A microcontroller-based entryway is progressed with a calculation of specific estimations of temperature and soil clamminess to check water levels. The framework can be actuated by solar-oriented boards and has a duplex correspondence connect dependent on a portable Internet interface that permits information examination and water system intend to be customized into a web screen. The headway in Wireless Sensor Networks made it suitable to use in watching and limit of greenhouse parameter in precision agriculture [2]. After the examination of the agricultural land, researchers conclude that the yield is reducing day by day. Nevertheless, use of technology in the field of agriculture assumes a vital role in expanding the production as well as minimizing the human efforts [3]. Some of the scientific experiments are done for furtherance of farmers which provides the systems that use technologies beneficent for expanding the agribusiness.

b) Proposed System

The proposed system aims at making irrigation advanced using IOT and automation technologies. The highlighting features of this project include controlling of water pump with/without internet through GPRS/GSM and status notification of the water pump. It also detects dry run condition and pump set theft control of water pump and send alert to the farmer.

The control of the water pump can be implemented using Amazon Web Server (AWS) with Internet or through mobile device by using a GSM without Internet. The water pump is operated either by Auto mode or Manual mode. In Auto mode or sensor mode by predicting the land the sensor motors on and off automatically. The device can be configured into manual mode when there is unpredictable weather conditions,it basically sends an alert message when the land is dry.

c) Methdology



In this project design, the hardware system mainly consists of a Renesas 64 pin microcontroller, Dry run sensor, LCD, water pump, GSM/GPRS, transformer and voltage.

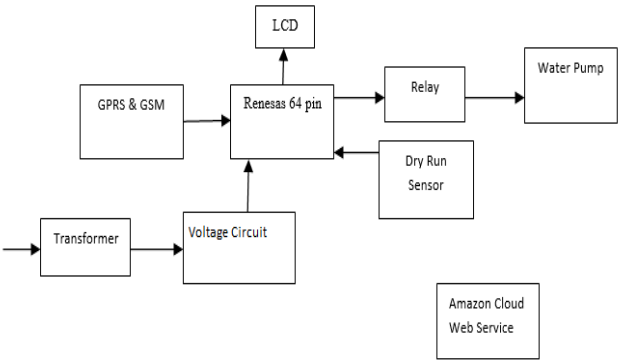


Figure 1: Block Diagram of proposed system

A single Renesas microcontroller is placed at the middle of the hardware system that monitors the entire hardware. An embedded c program is written that helps the Renesas microcontroller to work based on the given inputs. Microcontroller will observe the status of the water pump and it will update on the cloud server i.e., Amazon Web Server (AWS).

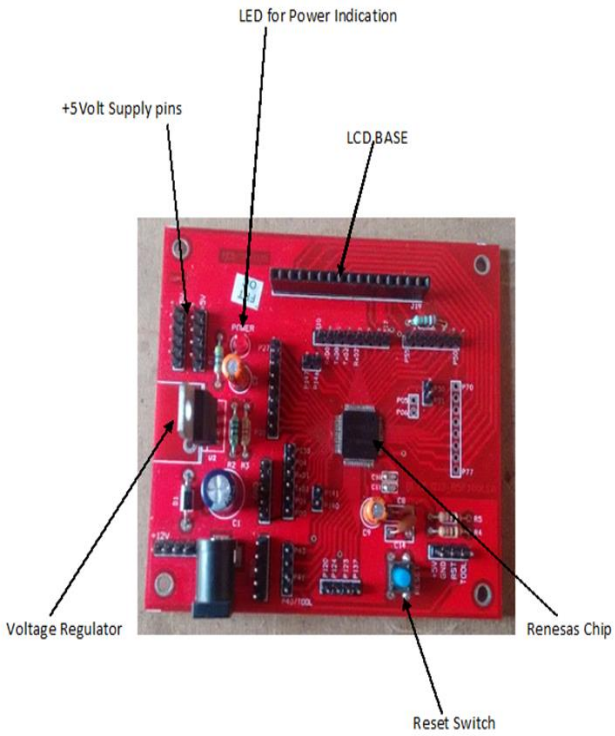


Figure 2: 64 pin Renesas Microcontroller Board

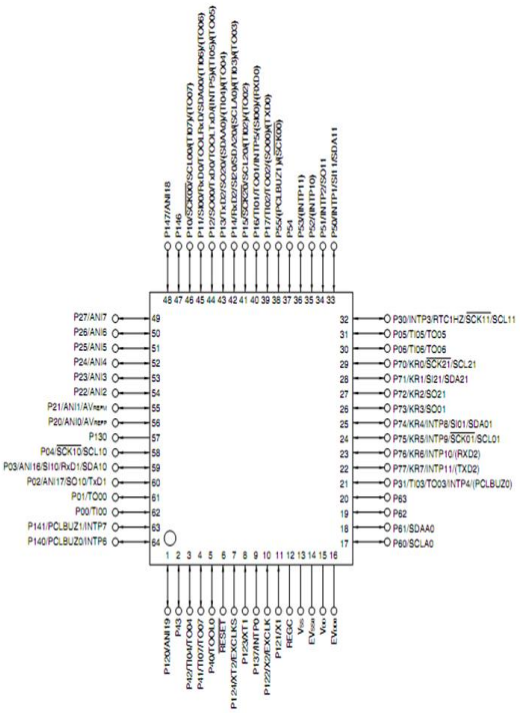


Figure 3: Pin Diagram of Renesas RL78 Microcontroller

A DC Water pump is used for the purpose of water flow and an Alpha Numeric LCD JHD162A is used as LCD. Alpha Numeric LCD display forms the fundamental part of the Embedded hardware Systems. The Data displayed in LCD is controlled by the Renesas Microcontroller.

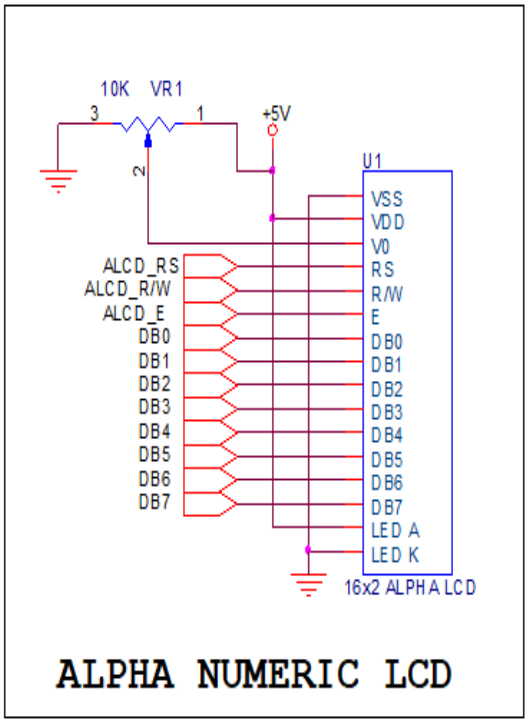


Figure 4: Circuit Diagram of Alpha Numeric LCD - JHD162A

The 5Volts and GND lines should be properly connected. For backlight in LCD connect p15 to 5Volts and p16 to GND. Adjust 10k resistor and connect p3 to 0Volts. If connections are proper the LCD looks as shown below.

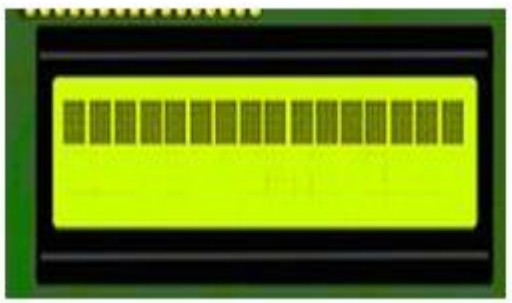


Figure 5: LCD (Liquid Crystal display)

A Transformer and a voltage circuit is embedded to estimate the power consumption, checks if there is presence of current and monitors if the power is on/off. LM317 Adjustable Regulator is used for this purpose.

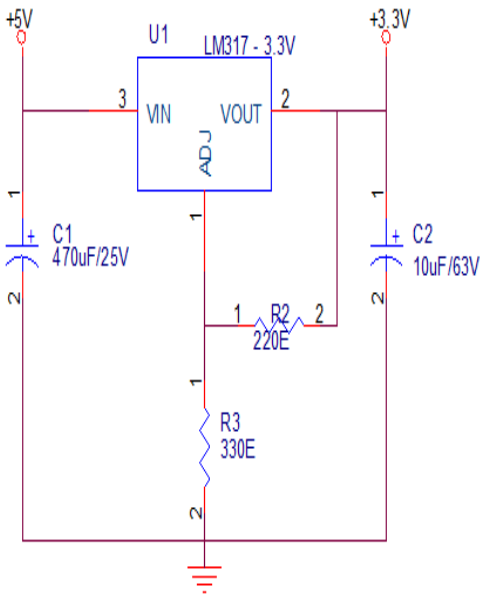


Figure 6: Circuit Diagram of LM317 voltage Regulator

Usually pump set is used for ground water levels, when the pump is on and the ground water levels is very low or if the pressure of the water decreases, there are chances for motor damages which is known as dry run. A Dry Run check sensor is placed at the water pump outlet once the pump is on, it takes some seconds for the water to flow in the outlet. If the water is not flowing through the outlet, the motor turns off automatically.

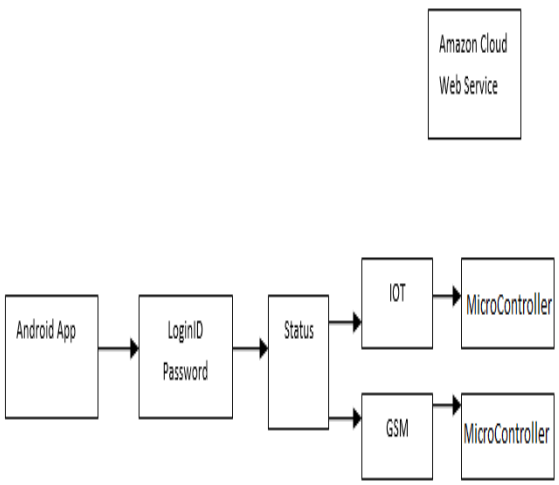


Figure 7: Block Diagram of Android Application

In android app when the farmer once logs in using login ID and password a new window will open that directs to status of the water pump. Water pump is controlled using IOT or GSM. When dry run is detected, sensor will send signal to the microcontroller and then microcontroller will send alert to farmer through GSM also it will update on server through GPRS.

Pump-set theft control- An obstacle sensor is placed below the soil to control pump-set theft, so when the pump-set is moved the sensor automatically sends the alert message through android app.

III. Conclusion

The project is designed using structured modelling and is able to provide the desired results. It can be successfully implemented as a Real Time system with certain modifications.

As technology keeps changing from time to time, many discoveries led to the revolution and innovation in various fields. Further, most of the units can be fabricated on a single hardware along with microcontroller thus making the system immensely packed to make the existing system more productive. To make the system applicable for real time purposes components with greater range needs to be implemented.

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Survey on Precision Farming using Mobile Applications

By Faraaz Ahmed, Faraz Ahmed, Ruman Pasha, Vinay Prathap, Asghar Pasha & Deva Kumari

Abstract- The need to provide a farmer with the right knowledge of the crops that would grow and increase the yield in respective farms is the main aim of the project. The information technologies used to accomplish the farmers problem are Mobile Application Development, Cloud Computing, Internet of Things (IoT) and Databases. The farmer will be able to choose the best and the right crops for their farm under different weather conditions, seasonal conditions and also, farmer will be able know the marketing condition such as Demand and Supply condition of the market before sowing the seeds in a farm. By meeting the Demand and Supply of the Market, a farmer will be able to increase the income which is achieved by farming on a farm. The farmer will be able to access the condition of a farm through historic records like previous 10 years conditions of the farm. The farmer will know whether the Crops are ready to be harvested or not. The farmer will also be able to know the details of all crops. All crops details will be provided to the farmer. Farmers will also be able to monitor the farm remotely using the Internet of Things (IoT) technology.

Keywords: digital farming, mobile application development, cloud computing, internet of things, farmer, demand and supply, weather condition, crops, crop details, urthecast, seed selection, best crops, farm conditions.

GJCST-H Classification: C.3

Strictly as per the compliance and regulations of:

Survey on Precision Farming using Mobile Applications

Faraaz Ahmed [α], Faraz Ahmed [σ], Ruman Pasha [ρ], Vinay Prathap [ω], Asghar Pasha [¥] & Deva Kumari [§]

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I. Introduction

More than 60% of Indian population depends on agriculture as primary means of livelihood. Due to size of the agricultural sector, however, yields of crops in India are generally less when compared to international standards. Farmers in India still choose crops in the traditional manner. To increase the crop productivity, farmers approach experts to seek advice for quality seeds selection, to know the growth conditions. Sometimes, farmers travel long distances to contact experts. Even after travelling such long distances, the expert may not be available at that time or they maybe not able to advise the farmer appropriately. In such cases seeking the expert advice is very expensive and time consuming. Farmers might not be aware of the details of the land such as land conditions, previous owner of the land and so on. Farmers might not know what is the demand and supply conditions of the market at the time of sowing the seeds in farms. Farmers might not be aware of the crops to be sowed in their field which would give the farmers higher yield with less resources and more efficiency. Farmers might have a little or no knowledge about the crops which are new, which would grow in the farm and provide a farmer with the maximum yield. Farmers might not be aware of the right time to harvest the crops in the farm. Farmers may harvest the crops too soon or delay the harvesting time. If a farmer is planning to purchase a new land, he might not be aware of the information about the owner of the land. Farmers may face economic loss due to market conditions, weather conditions, wrong crop selection or selection of crops which may not give them proper yield and more. Farmers might end up taking loans from banks, money-lenders and other financial organizations.

The need to provide a farmer with the right knowledge of the crops that would grow and increase the yield is the main aim. A farmer will be able to choose the right crop under the different weather conditions, seasonal conditions and also, he will be able know the marketing condition such as Demand and Supply condition of the market before sowing the seeds. By meeting the Demand and Supply of the Market, a farmer will be able to increase the income which is achieved by meeting the demand and supply in the market. The farmer will be able to access the condition of the farm through historic records like previous 10 years conditions of the farm. The farmer will know whether the crops are ready to be harvested or not. The farmer will also have access to know the details of all crops. All crops details will be provided to the farmer. A farmer will also be able to monitor the farm remotely using the Internet of Things (IoT).

Previously farmers used to depend on past experiences or knowledge passed on from their ancestors to determine what crops to grow in different seasons in the farm. This methodology is not that efficient. Farmers in India still use traditional farming techniques. They are victims of past success. Seed is a major input for obtaining high crop yield and steady growth in agricultural production. When seeds for crops to be grown they choose them based on what crop was profitable the previous year. They usually do not consider the supply and demand of the crop. As the supply increases the demand decreases there by also decreasing price for their yield. Marketing still is major concern in agriculture. With not effective marketing strategies, the farmers have to depend on middlemen

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for selling their crops. As defined in [1] "Different techniques such as variable rate seeding is used in which soil analysis is done which determines the crops which will provide maximum yield in the farm. This technique uses historical data as well as satellite images and various digital sensors to determine where the productivity is low or more. Also, GPS has helped soil sampling become more accurate."

II. Need for Precision Farming

As shown in [3] "Diverse nature of India, vulnerability in precipitation illnesses and weight on the yield can cause diminish in harvest creation. Sugarcane Industry stays one of the principle mainstays of the Indian economy, however it is confronting numerous issues. The zone of land under sugarcane development is yet noteworthy in numerous conditions of India. To expand the yield profitability, farmers approach specialists to look for their guidance for quality seeds determination, to realize the development conditions, to control diverse anxieties and illnesses. Occasionally they need to head out long separations to contact specialists. Indeed, even after travelling such long distances, the expert may not be accessible, or they might be not ready to help the agriculturist accurately. In such cases looking for expertise is extremely costly and tedious.

To build the normal sugarcane yield per hectare with least expense, an alternative arrangement is to adjust the 'Hard' Precision Agricultural idea. This idea employments cutting edge innovations to expand the viability of the product inputs including Seed determination, Growth and Disease observing, Weed controlling, Fertilizers, Pesticides and Water system. The Precision Agriculture (PA) utilizes information from GPS, GIS, and Remotely Detected Images for observing, examining and controlling the pressure, infections and other issues. In provincial regions it is hard to get to these kinds of information and in India majority of farmers obtain loan, so the expense of these instruments isn't reasonable to those agriculturists. Presently drifts are going towards Precision Agriculture, for this situation the option arrangement is to utilize the CCD pictures as an information for harvest the board. The upsides of this system over others are:

1. Pictures have high resolution,
2. Overcast conditions do not forestall capturing of images,
3. Quick conveyance of data to the client,
4. Cheaper."

III. Survey on Agricultural Applications

Although there are a number of applications which support for individual or different modules/ functionalities in agriculture. These applications are still not reliable and efficient given the signification of agriculture. There is also lack enough information on when the best time is to harvest the crops. Some of these applications are not user friendly and are often complex which makes it difficult for the farmers to understand. Different farmers will have different capacity in terms of investment in buying seeds and there is lack of information regarding the alternatives seeds the farmer can buy based on his monetary strength.

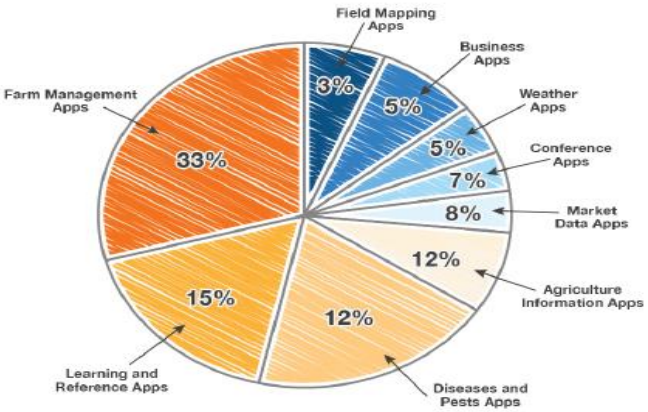

Figure 1: Different applications for Agriculture [2]

Figure 1 [2] shows the chart of different apps in agriculture. There are different applications for several activities. All the applications only provide a limited functionality and rely on other apps for additional functionalities. Agriculture applications can be classified as [2]:

- Business applications
- Conference applications
- Pest and diseases applications
- Farm the board applications
- Learning and reference applications
- Location-based applications
- Market information applications
- Weather applications

From the survey it is evident that there is a need for single user-friendly application that can be used even by an uneducated farmer.

IV. Study of Various Agricultural Applications

The following table shows some of the most popular agricultural applications and their current functionalities and some of improvements that can be made to help the farmers even more.

Table 1

Mobile Application Name	***Description of the existing system***	***Description of the suggested system***
Agri App	Agri App is a standout amongst the most enjoyed applications by farmers. It is a web-based cultivating commercial center bringing agriculturists, cultivating input/yield, taxpayer supported organization on an online stage. It likewise gives visit choice to agriculturists. Ranchers can without much of a stretch visit with a specialist of farming utilizing this application. This versatile application gives broadened recordings of agribusiness work.	Proposed framework is additionally an android application which underpins the agriculturists on an online stage. It does not require any talk highlight to give ability to the agriculturists yet recommend the best products to the ranchers to be sowed in a farm as per the present area properties and the interest and supply in the market.
Iffco Kisan App	This android application gives data about the most recent agribusiness exhortation, most recent market costs, and different cultivating tips. It likewise gives climate figure data. The ranchers can without much of a stretch take help of agribusiness specialists utilizing this application.	This android application gives latest market costs to the agriculturist. It not just gives the anticipated climate estimate of the favored region yet in addition think about the climate of the favored territory with the past climatic states of that specific zone. All the yield subtleties are given through the informational collections which are as of now accessible on the web. It gives skill to the agriculturist with no talk bot.
Agri Media Video App	This android application gives mastery by reaching the specialists through the talk bot and furthermore enables the ranchers to transfer any related pictures to the issue. This cell phone application likewise gives different recordings identified with agribusiness practice, new advancements, effective ranchers, provincial improvement, farming news, new govt. plans identified with horticulture.	No visit bot is utilized in this versatile application. Since the horticulture procedures are now known to a rancher the application gives the data to the agriculturist which he probably won't think about it while cultivating because of absence of information. This application does not give any news through recordings to the ranchers.

FarmBee - RML Farmer	It gives rich farming substance and data at each phase of the yield life cycle. An agriculturist can browse 450 harvest assortments, 1300 markets, 3500 climate areas. It likewise gives advertise cost and climate figure dependent on a client area.	This android application gives insights regarding the yield is prepared to be gathered or not. A rancher can look over a ton of yield assortments, climate figure and additionally past climatic conditions. It likewise gives current market costs and climate gauge dependent on a ranch area.
Kisan Yojana	It gives data pretty much all Govt plans to Farmers. It drives the data hole between the rustic individuals and Govt. It additionally gives the plans of the distinctive relative states Government. This versatile application likewise spares the time and travel cost of Farmer to achieve the state Govt office is spared.	This android application gives the economic situations like interest and supply of the market, ebb and flow costs for the create, climatic conditions, climate conditions, regular climate conditions, and more zone properties are considered to recommend best products for a farmer cultivate which will yield progressively and give more economy to agriculturists.

V. Issues that Need to be Addressed

Limitations of Precision Agriculture (PA) are as discussed in [3] are as follows especially in developing nations like India:

1. Perception of farmers and lack education in rural areas,
2. Smaller farm lands,
3. Absence of examples of overcoming adversity,
4. Traditional techniques used,
5. Land possession, foundation and institutional requirements,
6. Absence of expertise when needed,
7. Accessibility, quality and cost of information.
8. Lack of local technical expertise,
9. Availability, quality and cost of data.

As discussed in [4] some of the following technical issues must be addressed:

- Generation of remote sensing dataset with high spatial & temporal resolution
- Identification of crop nutrition stress with remote Sensing
- Optimizing crop seeding date/order with remote Sensing
- Predicting crop mature date and optimizing harvest with remote sensing.

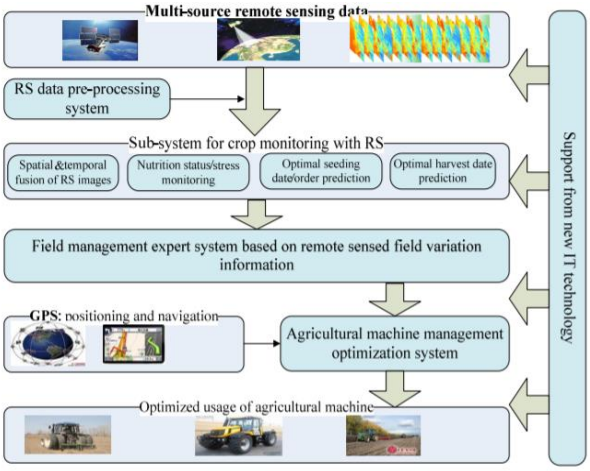

Figure 2: Structure of a Satellite-based Field management system [2]

VI. Conclusion

In Today's world mobile applications play a vital role in all aspects of life. Major progress is seen in Financial applications, Educational applications, Entertainment, Social media applications and IT apps. But Agricultural applications haven't made enough progress given its economic importance in a country like India. Smartphones with more computing power is more affordable now. Even Internet services are cheaper.

India is diverse country with a number of native languages but most of the agricultural applications in today's market are in English which farmers in India may find difficult to understand.

There is a need for agricultural applications which can focus on peculiarities of specific geographical areas for providing more accurate and efficient information to the farmers. Also, we need applications that can help monitor farms dynamically in real time rather than static or outdated information. This can be done by adopting Precision Agriculture.

If a single application can provide the necessary information on seed, crop estimation, pesticides, fertilizer, harvest time, estimation of yield that will be produced including weather conditions and can also connect the farmer which the market so that he can understand the demand and supply for the crops he grows it will immensely help the farmers.

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Tips for writing a good quality Computer Science Research Paper

Techniques for writing a good quality computer science research paper:

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. 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.

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

4. Use of computer is recommended: As you are doing research in the field of computer science then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.

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

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

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10.Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. 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 for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

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

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

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

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon 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 for 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 of 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 criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to 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 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 avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

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

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite 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 approaches 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. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a 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 limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity 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 of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets 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 for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory 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 soundly written procedures segment allows a capable scientist to replicate 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 to give the least amount of information that would permit another capable scientist to replicate 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 section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show 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:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the 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—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and 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 as 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. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give 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 manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit 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 section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an 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 implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully 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 the prospect, and let it drop at that. Make a decision as to whether each premise is supported or 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 an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of 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 other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

The Administration Rules

Administration Rules to Be Strictly Followed before Submitting Your Research Paper to Global Journals Inc.

Please read the following rules and regulations carefully before submitting your research paper to Global Journals Inc. to avoid rejection.

Segment draft and final research paper: You have to strictly follow the template of a research paper, failing which your paper may get rejected. You are expected to write each part of the paper wholly on your own. The peer reviewers need to identify your own perspective of the concepts in your own terms. Please do not extract straight from any other source, and do not rephrase someone else's analysis. Do not allow anyone else to proofread your manuscript.

Written material: You may discuss this with your guides and key sources. Do not copy anyone else's paper, even if this is only imitation, otherwise it will be rejected on the grounds of plagiarism, which is illegal. Various methods to avoid plagiarism are strictly applied by us to every paper, and, if found guilty, you may be blacklisted, which could affect your career adversely. To guard yourself and others from possible illegal use, please do not permit anyone to use or even read your paper and file.

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		
	A-B	**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

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Global Journal of Computer Science and Technology

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