

Smart Farmer's Kiosk

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Abstract- Farmer- Kiosk is a computing unit farmer's friendly machine with software and hardware. The Kiosk is an All-Time Payment Machine (ATP) where the public can access bill payments, loans status and field test updates for farmers. This machine is similar to the previous Phone Booth, but has been changed to as a future development for the benefit of customers. Kiosk machine mostly placed in high-volume places like Stores, banks, hotel lobbies, etc. Bills include water, electricity, loan repayment and more. Kiosk machines are used as ticket vending machines at tourist attractions and train stations.

Keywords- Kiosk, bill, Payment, RFID, and Schemes.

I. INTRODUCTION

It is a multi-purpose Kiosk that provides the opportunity to pay under one roof, avoiding long queues, and offers different types of fast payment services. We have many online payment applications in today's technology, but according to the 2011 census, 43,087 out of 5,58,537 villages do not have an internet connection. This article helps to fill this gap. Agriculture forms the basis of India's economic development and is a source of employment and income in rural areas, which is why we say "farmers are the backbone of India".

Good crop production is dependent on land area and farmers suffer from low crop yields due to a lack of knowledge of specific weather conditions to collect weather data. This article gives farmers advice on the best crops for specific soils broken down by soil quality, kiosk machines are not limited to but can also measure soil samples and NPK values.

NPK values Contains nitrogen, phosphorus, potassium, these are important macronutrients for the overall growth of crops. With the help of potentiometers and pH sensors, the ambient temperature and humidity are known, which used to overview forecasts. Information also informs farmers of various government schemes loans and subsidies that can help them.

Paying bills is one of the jobs that cannot be avoided in today's lifestyle, paying bills takes a lot of time due to

long/hurried competition. In rural areas, people or farmers have difficulty paying their bills, this machine is designed to provide the integrated bill payment to reduce the hassle in the payment process.

II. LITERATURE SURVEY

In this section, we examine different information about Kiosk technology.

The development of modern technologies in the modern agricultural sector is important for farmers to increase yields, representing seasonal changes in geography, rather than assessing soils and crops that are known to reduce yields and losses.

This article provides useful information about different systems and sensors for soil testing and monitoring. Various types of sensors are used to monitor humidity, temperature, pH of water and soil moisture. Finally, the data is stored in the cloud are used for crop prediction and the payment details are sent to the mobile number. By combining this information, farmers can predict which crop will be suitable for soil conditions.

Aneeqa Rehman proposed the "RFID Technology: Beyond Cash- Based Methods in Vending Machine", This article describes the design and implementation of a of a cashless and secure machine for vending machines that uses RFID technology to improve traditional payment methods that involve many problems and risks such as hacking, checking, storage., money etc. and information about coins and banknotes. RFID has gained tremendous power in retail, security, transportation, pharmaceutical, defense, medical and many other areas and now vending machines.

Our plan includes passive RFID tag and reader for customers, Arduino Mega microcontroller, SPI protocol for RFID and Arduino interface, and keypad for password protection, Liquid Crystal Display (LCD) available for user names product display and balancing, as well as sending SMS alerts. Solenoid architecture using the GSM module is supported by a relay driven DC motor in the automaton mechanism. It also explains how this product-based RFID card vending machine can complement the engineering system.

III. MATERIALS AND METHODS

Algorithm: Gradient Boosting

One of the most powerful and successful techniques in machine learning is gradient boosting. Support is based on the principle of mutual support. It is a sequential process that combines the weaknesses of the learning process and provides more predictable results. When, I say, the results of the model are weighted against the results of the previous period. The predicted outcomes are given a higher weight, while the unclassified outcomes are given a lower weight.

Framework: Flask

Flask is a small web application written in Python. It is classified as a micro-framework as it does not require special tools or libraries. It does not have a database abstraction layer, form validation, or other pre-existing third-party library components that provide functionality. However, Flask supports extensions that can add functionality to your app, as they are implemented in Flask itself. Extensions include object-relational mappers, form validation, upload handling, various open authentication methods, and a few other related tools.

SMS: Fast2SMS

With the help of Fast2SMS API you can send SMS directly from your own platform and send SMS at the highest speed. SMS API is the easiest way to send SMS directly from your platform. It is widely used in e-commerce where they have to process thousands of customers at the same time.

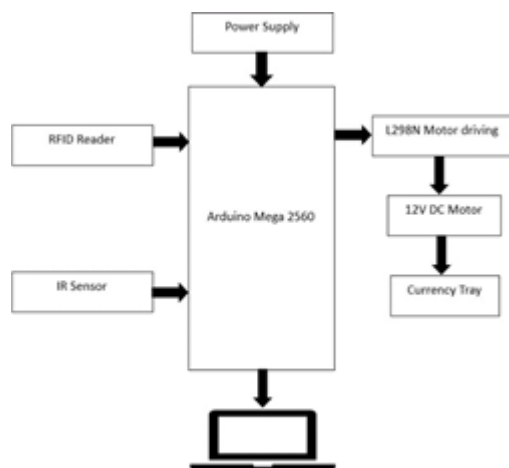


Fig. 1. Block diagram of kiosk machine

IV. COMPONENT DESCRIPTION

ARDUINO MEGA 2560

Arduino Mega 2560 used in our project; is a microcontroller board (AT mega 560). It has all the necessary functions to support and direct the microcontroller and its devices. The Arduino Uno has 54 input/output pins, 16 analog inputs, 4 UARTS (hardware serial ports) USB connections and a reset button with a 16 MHz crystal oscillator. It is designed to provide the basic functions necessary to protect the microcontroller from low and high power.

DC MOTOR

DC motor is an electric motor that converts DC electrical energy into mechanical energy. Despite the DC motor type, it operates in 2 states, that is, the current direction of some motors is constantly changing. The use of electronic devices with different speed and speed of the engine is allowed.

RFID READER & TAGS

RFID is the abbreviation of Radio Frequency Identification, Tag refers to the science in which digital information is encoded in RFID tags, and RFID is compared to barcodes in the fact that the paper or tag is received from a system that stores statistical information. In the database.

We have used EM-18 reader to read the Farmer card, debit card.

L298N Motor Driver

L298N is a combination, it can support other equipment as motor driver, control two small motors in both directions at the same time, let the fuselage move in all directions. Using L298N, we can control two motors with one L298N. The motor driver acts as an interface between the Arduino and the motor.

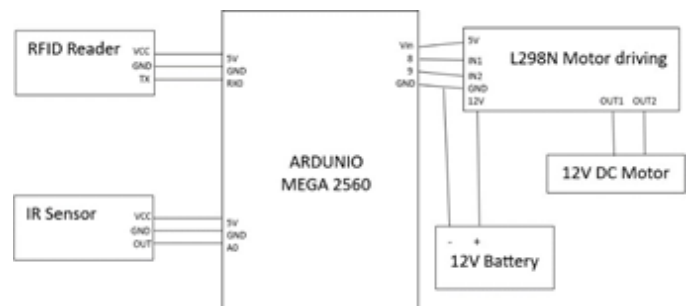


Fig. 2. Pin Configuration of Kiosk machine

V. DESIGN AND IMPLEMENTATION

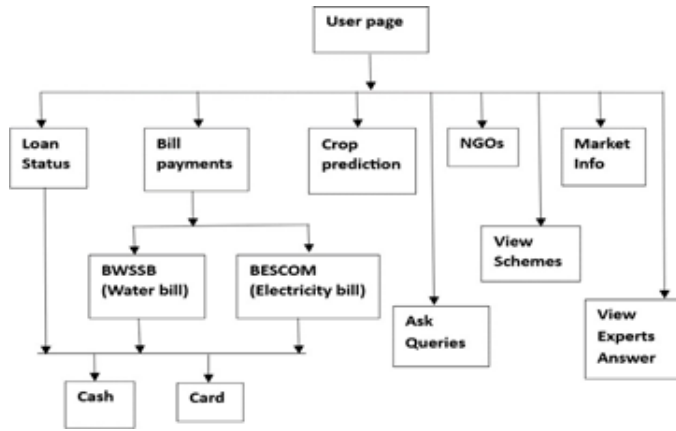


Fig. 3 Flowchart

The Kiosk machine initially displays a message on screen, that “WELCOME TO FARMER KIOSK.” After that user has to provoke the operation by choosing the domains which were displayed on the screen.

The domains are

- Loan Status
- Bill Payments
- Crop prediction
- NGOs
- Market Info
- View Schemes
- Ask Queries
- View Expert Answers

- First user must login using RFID card given while registration process.
- If user clicks on Loan Status it shows the user about loan status details. If user desire to pay the loan due then user can make the payment via two modes
 1. Cash Method
 2. Debit Card

If user select the cash option, then it will ask to put a money in currency tray, we have IR sensor which will detect the currency accepts it and sends SMS to user that payment successful and the bill details.

If user select the card option, then it will ask to swipe the card, it will verify deduct amount from account and sends SMS to user that payment successful and the bill details.

- If user clicks on Bill Payments, it shows bill payments domains The domains are
 - BWSSB (Water bill)

- BESCOM (Electricity bill)

- If user clicks on Crop prediction user as to enter the NPK vales and other values using Gradient Boosting Algorithm the machine predicts the suitable crop.
- If user clicks on NGOs user can view the NGOs registered and contact NGOs for farmer needy.
- If user clicks on Market Info user can view the all-products price list.
- If user clicks on View Schemes user can view the Government Schemes if they are eligible user can apply for it.
- If user as any doubt or queries then user may ask queries in “Ask Queries” section and view answer for the “Queries in View Expert answer” answered by Expert.

VI. RESULTS AND DISCUSSION

Farmer-Kiosk offers rural farmers a secure, business-friendly solution to pay their bills in the market without the intervention of workers.



Fig. 4. User Page

In the above figure, the user can provoke the operation by choosing the domain.

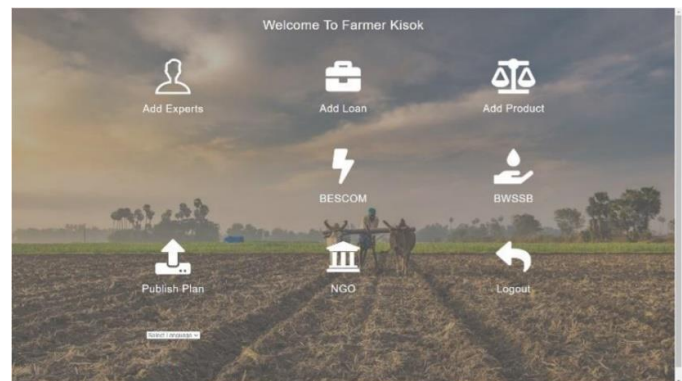


Fig. 5. Admin Page

In above figure, the admin can add Experts, Loan Details, Product Details, Bill payments (BESCOM, BWSSB), NGOs and Publish the Government Schemes it will display to the user.



Fig. 6. Registration Page

In above figure, in order to login to the user page, the user have to first register by providing necessary details.

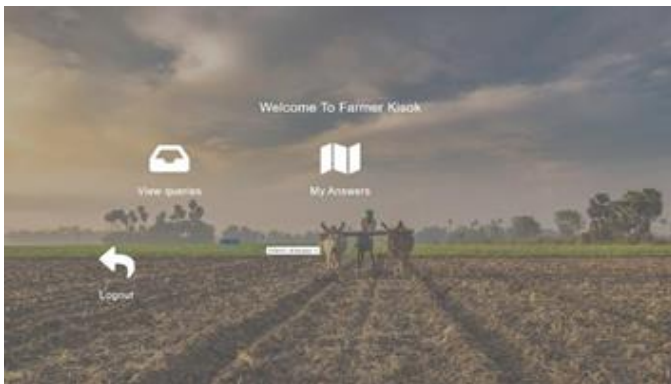


Fig. 7. Expert Page

In above figure, experts will answer the all-user queries given to experts.

VII. CONCLUSION

This paper presents a state of art and user-friendly ATP Kiosk is used to guide farmers or citizens without going near a government office. Soil testing has been one of the best activities for farmers to avoid losses due to reduced crop yields. Paying bills is an important job for every citizen and Kiosk is a machine that reduces labor and makes work easier.

VIII. FUTURE WORK

Kiosk machines are usually installed in places with high traffic and frequent payments, because in the future we can set up this kiosk to sell medicine to hospitals, to view student databases in schools. Kiosks can also be used for fast

checkout services in restaurants without human intervention. As technology, we can use QR code scanners instead of RFID readers.

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