Know Your Trade

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Abstract - *The definition of internet of things could be "networks of physical object that contain embedded technology essence to communicate with extrinsic environment". The industrial internet of thing is part of internet of thing that focuses on devices and object used in business setting. It will help to connect surrounded things around you to internet including wearable devices, metering devices and environmental sensor. These devices will connect to internet to share different types of data. We have proposed Industrial Automation using cloud computing and sensing based applications for Internet of Things. This paper presents the idea of developing an application which will help in automating the process of determination of output quantity from the machine. It will also help in determining the market cost of final product, software-based creation of purchase and dispatch processing notes and easy analysis of stock.*

***Key Words*: Industrial automation, Sensing based applications, Internet of things.**

1. INTRODUCTION

Automation is defined as a technique of making an apparatus, a process or a system operate automatically. Referring to this definition the automation profession includes "everyone involved in the creation and application of technology to monitor and control the production, delivery and management of products and services".

Know your trade is a project for Nutrich foods Pvt. Ltd which is an industry undertaking all manufacturing and processing operations and marketing of all types of Indian-Agro commodities such as maize, cornflakes, cashew nuts etc. This project mainly focuses on automating the cashew cutting machine process and at the same time making various activities easier by reducing the manual work load. The proposed system will consist of an android application which will be used to track records of purchase and dispatch processing nodes so that data will be stored and retrieved efficiently, it also reduces the time required and will provide information in just a click. The application will allow only authorized users to login which will provide security of data. It will also provide the facility to view the details of output from the processing equipments which will reduce the need of labors involved. It will give the statistical results in terms of cost on monthly basis so that the user can take selling and purchase related decisions.

2. Implementation Details

2.1 System Overview:

(Figure 1) shows the system architecture of the proposed system where, the initial weight and final weight will be sensed by the sensor. These sensed parameters will be sent to the amplifier HX711 which in turn will send it to the controller arduino NodeMCU. The controller will pass the data to the database through LAN for further calculation. This data will be retrieved using web services so as to apply the algorithm to calculate the final output for the processing equipments. The output calculated will be available to the user through web application. The application will also provide interfaces for creation of notes and statistical data.

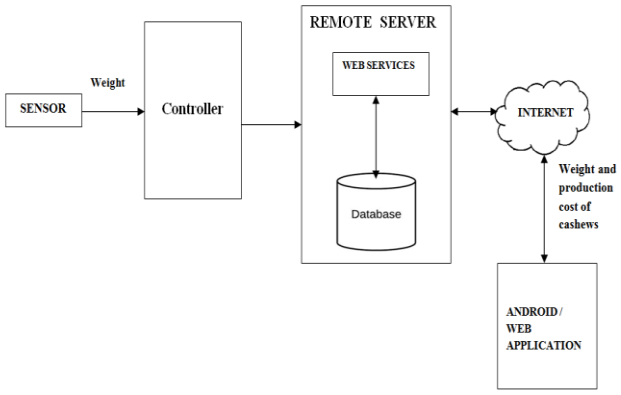


Figure 1: System architecture of proposed automation system.

2.2 Modules:

2.2.1 Controller: Arduino NodeMCU

The controller will work on sensing based applications and the data. The sensed data from the Load cell sensor will be passed to the controller. The amplifier present in the controller will convert the data from analog to digital. This data will be passed on to the website with the help of arduino wifi chip ESP8266. The main logic of converting and passing the data to the website will be present in the microcontroller of arduino NodeMCU.

2.2.2 Remote Server:

The remote server will allow users to gain access to files and print services on the LAN from a remote location. Remote access will help you to get access to a computer or a network

from a remote distance. In corporations, people at branch offices, telecommuters, and people who are travelling may need access to the corporation's network. Here, web services will play a major role as it will be used for storing and retrieving data from database. The data coming from the controller will be stored in database using web services. The parameters initially stored in database will be fetched and used as per the need. Finally the data from the database will be made available for the application using web services.

2.2.3 KYT Application:

The Know Your Trade (KYT) application will provide user interface for providing facilities to the user. Hence, the user will be able to:

i. *Maintain the data for purchase and dispatch processing note*: The user will be able to feed the data which will include specification of product, payment terms, quality of product, packing and packing material, and rate and shipment period on the basis of mails received for the finalized deals so as to maintain proper track records for the deals into the database.

ii. *Analyze the stock*: The records maintained will be analyzed on the monthly basis to give statistical results to the user so that he can take decisions related to purchase and sell of goods.

iii. *View the output of equipment and production cost*: Through the interface user will be able to determine the input and output to and from four processing equipment. With this data the admin will be able to calculate the market cost of the product and create the dispatch note accordingly.

Hence, a login facility will be provided separately for the owner and the subordinate so that the owner will have an authority to access the android application through which he will be able to maintain the data for purchase and dispatch processing note, analyze the stock, and view the output of equipment and production cost. Whereas the subordinate will only have authority to access the web application so as to maintain the data for purchase and dispatch processing notes.

2.3 Experimental Setup:

The following are the hardware and software requirements for the proposed system:

2.3.1 Hardware Requirements:

a. Cashew Cutting machine
b. Arduino NodeMCU
c. A Smartphone
d. 1GB of RAM min
e. 50MB of free storage space min

2.3.2 Software Requirements:

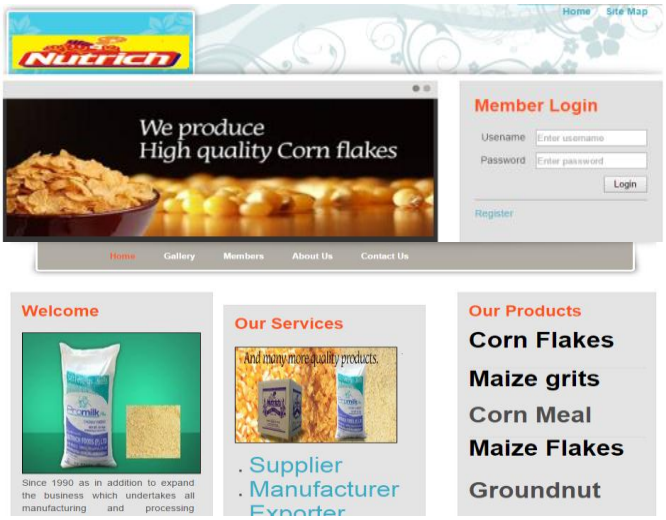
a. Operating System: Windows 7+, Android version 4.0+
b. Programming language: Java, HTML, PHP, JavaScript
c. Tools: Android Studio, Wamp Server
d. Database: MySQL

3. DATASET

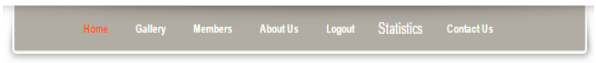
The values from the sensors are the part of the dataset. The database has entries of the sensed data from the Load cell sensor. The input for the sensors is the graded cashews that fall into the container placed on the weighing machine.

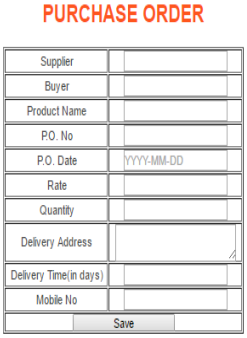
4. RESULT SET

The following are the snapshots for the proposed system:



The above screenshot shows the home page. User can login through this page using his username and password and if he is not a registered user, he can register through the link provided with name register it also shows the details of industry that is about their products and services.





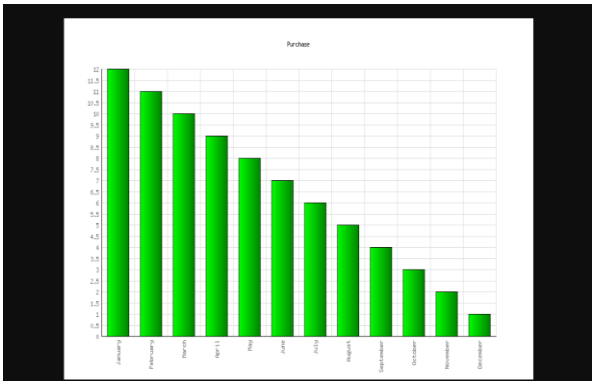
The above screenshot shows the purchase order form.

Enter Year

Month	Enter Amount
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

Enter

The above screenshot shows the table for creation of statistical analysis.



The above screenshot shows the statistical analysis of the purchase and sell of the goods.

Cashew Machine output

Sensor Data:

Date:2017.03.10

Time:08:45:00am

Weight in kgs:0.07

The above screenshot shows the output of the sensed data.

5. CONCLUSIONS

The work reported in this paper is part of our ongoing research effort to develop an application and to overcome the drawbacks present in the existing system of Nutrich Foods Pvt. Limited. We list our main contributions below:

1. We motivated the notion of automating the process of determining the output quantity of goods.
2. We presented software-based purchase and dispatch processing notes.
3. Through application we successfully analyzed the track records.
4. We also maintained the stock details through database.

REFERENCES

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