

ACQUISITION SYSTEM

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ABSTRACT:

This paper tells us about how smart machines seem revolutionary, like something out of science fiction, with various capabilities. However, acquisition systems are the next step in a history of incremental advancement in machines. The main idea of this project is to make the work of staff so convenient and in a smarter way. In various universities the internal and the external examiners faces various difficulties while conducting examinations. It minimizes the time duration taken by the staffs from the examination cell to the respective exam halls by displacing the work of humans by machines. Powered by these machines, the new industrial revolution is changing how machine builders design, also explains how manufactures operate today and in the future. It remains more flexible and also expected to dramatically change the nature of work and other society norms.

KEYWORDS—efficient examination, fast-moving digital transformation, implementing technology, case based reasoning, fuzzy logic and dramatic efficiency.

I. INTRODUCTION

The world is been completely automated. Currently, we inhabit a world in which several applications use a computer inside another device, realizing control and processing with increased performance. Nowadays the computing technologies enables the creation of computational platforms which supports the new and smarter machine. Overall, by creating a collaborative environment with cheaper non-recurrent engineering cost and highly beneficial manner.

This highly interactive features go beyond traditional systems. This paper reviews technology advancements that could enable the research and development of new intelligent systems in a profitable manner. The machine monitoring also enables preventative maintenance which helps to avoid component failure. It also reduces the damage to the components.

II. PROBLEM STATEMENT

In various universities organizing an examination seems very difficult as the examiners have to arrange the paper bundles before several days before exams. It includes lot of manpower and time consumption. The examination crew takes a longer time for arranging the papers to distinct classes and then they have to carry the bundles to a longer distance. It leads to stress and burden for the crew members of the examination cell. In order to avoid this problem, we have found out the acquisition system, which displaces the human work easily.

Acquisition system is a collection of hardware and Software components which controls the physical characteristics. The bundles are placed inside the system and by using the raspberry 3b+, we monitor and control the programming. By using the rack and

pinion set, the booklets are arranged and a motor is set up at the ends. By scanning the RFID reader and giving the input, the internal and the external examiners can collect the papers at the respective halls.

III. SURVEY

Small survey was done in nearly five universities in and around our city. When we went on examining every examination cell, we found staffs facing various difficulties while organizing the examination as they have to arrange the question booklets and answer booklets several days before the examination. In addition to this, they have to arrange the bundles to various centers as it covers longer distance. It also consumes more manpower work and time consumption. This analysis helped us to come out with designing a single machine for doing the entire tasks quickly.

IV. HARDWARE COMPONENTS

In our project, acquisition system, we have developed a mechanical setup for continuous and efficient process. The following are the hardware components used,

1. Raspberry pi
2. RFID reader
3. Rack and pinion
4. Wiper motor
5. Buzzer
6. Display board
7. Light-emitting diode

1) RASPBERRY PI:

The Raspberry Pi is a minimum costs computer which provides a collection of GPIO (general purpose input/output) pins which enables an access to control electronic components for physical computing characteristics. Initially, Raspberry Pi series is created. All the modules and the interfacing units are created to abstract the information from the input unit. The information from the various users such as the internal and the external examiners are required to process. The information which is collected is stored in the respective modules such as memory card and then they are interfaced with the post collection unit. The power available to charge the raspberry pi is supplied from the power source. From the power source, power supply is given through a Wifi module. Server module is also connected through the Wifi setup. The connection so far connected is given to the control unit.

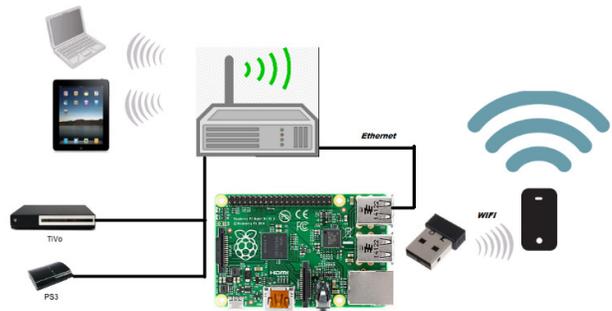


Fig 2: Advanced Raspberry PI Setup



Fig 1: Raspberry PI Model

Raspberry pi control unit evaluates the RFID(radio frequency identification reader) of each and every individual user. Initially the raspberry series is created. Power supply unit is monitored and controlled. It is driven by a motor controlling unit.

Raspberry pi can use a Video Core IV GPU via a binary blob, which is loaded into the GPU at boot time from the SD card, and additional software, that initially was closed source. This part of the driver code was later released. However, much of the actual driver work is done using the closed source GPU code. After abstracting the information required from the control, it is sent to the verification unit for further verification process.

VERIFICATION UNIT:

A radio frequency identification reader (RFID reader) is used to gather various information from an RFID tag of the internal and the external examiners, which also acts as a storage system to track individual objects. Radio waves are used to transfer data from the tag to a reader and then it is processed. Information is embedded in the tag which is a unique identification number.

The collected information from the RFID tag is connected to the server. The output from the storage system is also connected to the raspberry pi controller unit. It is also evaluated that whether the tag of the internal examiner is a valid one or whether it has any damage. A separate tag is also been to the external examiners and the verification process. The process continues and it scans the reader and collects the information, it transmits back signal containing data on that tag and then that data provided by the tag will be transformed into digital information to be received by a computer.

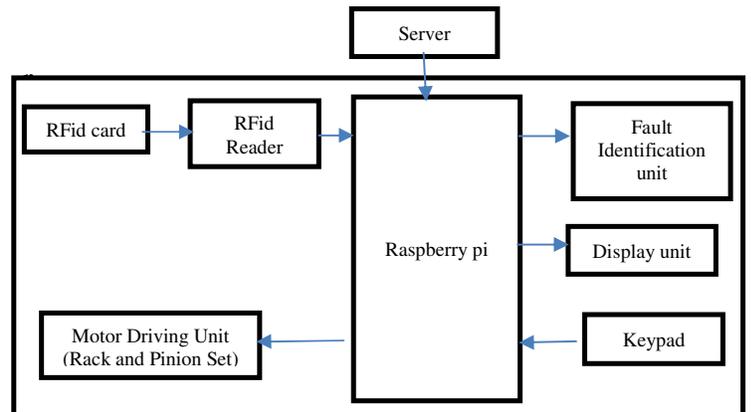


Fig 3: Block Diagram of raspberry based smart system

MOTOR CONTROLLER UNIT:

Motor driver is interfaced with the raspberry pi. Rack and pinion set is also dispatched with the motor driver unit. A rack and pinion is a type of linear actuator that comprises a pair of gears which convert rotational motion into linear motion. A circular gear called "the pinion" engages teeth on a linear "gear" bar called "the rack"; rotational motion applied to the pinion causes the rack to move relative to the pinion, thereby translating the rotational motion of the

pinion into linear motion. a rack and pinion is kept in a housing known as the steering gear box and the ends of the rack are connected to the wheels by tie rods. Its straightforward design can be implemented into most power steering systems. The rotational motion of the pinion is therefore translated into linear motion along the rack.

The driver motor consists of the motor itself and the gears, which reduce the speed output governed by the motor. The ferrite type wiper motor uses three brushes: a low-speed brush, a high-speed brush, and common brush which is provided for ground connection. The driver motor consists of the motor itself and the gears, which brush (for ground). in initiating the movement. The gear head motor is the type of wiper motor known for its abundance in torque. If the driver motor needs to be rotated in a particular direction, it needs a separate power source.

The different power sources has a voltage of about 12V DC supply, current rating is about minimum of 1.6 amps at 70 rpm; 1 amp at 41 rpm, computer batteries of about 12volts output and other battery supplies that do not exceed the limit of 12 volts otherwise the motor is bound to overheat. It is done by combining two mechanical technologies to perform a particular task.

A combination of electric motor and worm gear reduction mechanism provides the power to the wipers. A neat linkage Wiper motors in the wiper system functions on a power supply in order to move the wiper blades in a smooth motion and in an efficient manner. The wiper motor rotates continuously in one direction which is then converted into a back and forth motion in a particular direction.

It is used to lift the paper bundles in an upward motion. After each and every examination, the answer scripts goes to the original position in a such a manner that it must not hit the rack and pinion set. Ultrasonic sensor senses and detect whether the paper is being available or not after a mechanism of upward motion is being completed. The pulling capacity of the driver motor is also measured and checked periodically.

When the paper is not available, alert is being given by the alarm. It is intimated by a buzzer sound. It involves amplifying a power compared to a source that will generate when it plug to the power source , a square wave frequency is generated and the sound is produced between 2 terminals.

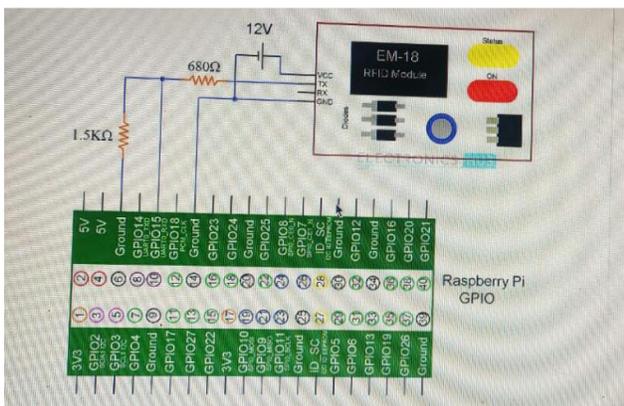


Fig 5: Connection diagram

INPUT AND OUTPUT UNIT:

The input to be fetched is given through the keyboard. After the Rfid tag is scanned, implementation processing undergoes and name will be displayed in the display unit as “WELCOME NAME”. The count of the scripts will be asked and it must be provided. And the scripts will be dispatched periodically according to the input provided.



Fig 4: Driver Motor

COUNTER UNIT:

Counter unit is being executed by a gear mechanism. When the gear mechanism automatically rotates, the paper is being pulled out from the machine. Here the input is fetched through the binary digits and the paper is being counted and then it is abstracted out. It is monitored by using the infrared sensor and the process continues.



Fig 5: Buzzer

FAULT AND IDENTIFICATION UNIT:

After the completion of validation unit, it further goes into the fault and the identification unit. In this fault identification unit, wrong RFID tag of the internal and the external examiner is been detected and identified. It is thus eliminated. The process is continued for each and every examination.

CONCLUSION:

The following results can be achieved from this project.

Efficient method of examination is conducted. It minimizes the time taken by the staffs in carrying the exam bundles from the examination cell to the respective classes. It displaces the work of humans by machines in a smarter and in a convenient manner.

V. REFERENCE

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