

AN ENTIRE AUTOMATION OF UNMANNED GATES USING ZIGBEE AND ATMAL

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ABSTRACT

Aim of this proposal is to govern the unmanned railway gates using sensors. At instance more number of accidents occurring at railway gates due to manual error and unmanned gates. This paper employs two zigbee sensors. zigbee sensors are in rails of the track on the both sides of the gate. Zigbee sensors are utilized to detect the arrival of train. As soon as the zigbee sensors resolve the arrival of train, a buzzer is alarmed indicating the regional people on the trains approach towards the gate. A DC generated motor is reported from the sensors. The same mechanism is used to open the gates respectively. This proposal also has a traffic spikes which helps in preventing the entry of vehicles at the time of closing the gates. This type of automatic mechanism is required to avoid collisions.

KEY WORDS: Unmanned level crossing, Zigbee sensors, DC geared motor.

I. INTRODUCTION

Paper proposes a unique and economical method for improving the safety of our level crossings. Nowadays we often hear about the accidents in unattended railway gates. As per the survey of Indian Railways, the accident rates at unmanned gates are 32.7% of accidents in railways. The manual operation at crossings of railway gates is not so reliable. In this project we detect the arrival of train and warn the road users with buzzer alarm about the train approaching the gate. Then the gates will be automatically closed by the help of motor. As

soon as the train leaves the gate, the gate will automatically opened and set the way road users. As in comparison with the existing system, this automatic system can be more advisable in the replacement of unmanned gates. Primary aim of this approach is to minimize the accidents at unmanned gates which is the major threatening issue of railways.

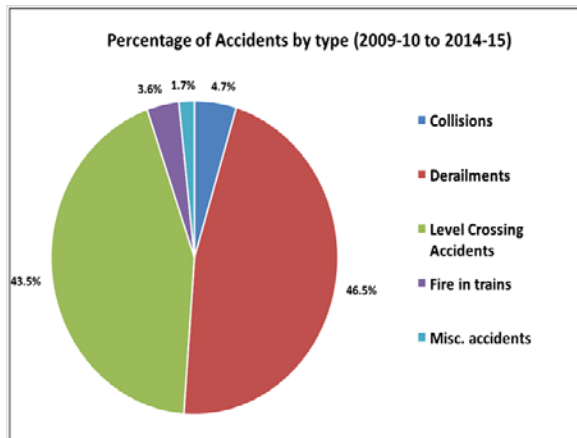
II. PROBLEM FORMULATION

EXISTING SYSTEM:

The status of the present Indian Railway is as follows:

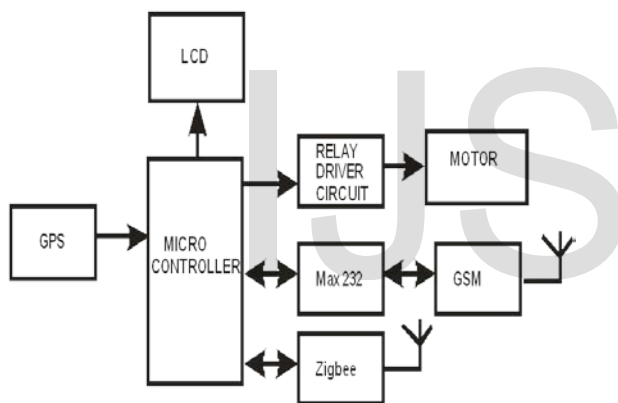
The Indian railway system comprises of the manual operation in maintaining the railway crossings. The process involves telephonic conversation between two level crossings. The station master informs the next level crossing operator about the trains approach towards the gate. The gate operators then performs the action of closing and open the gate.





III. HARDWARE IMPLEMENTATION

The materials and components that are used in automatic railway gate control system will be discussed in the following.



Zigbee Sensors:

The name refers to the waggle dance of honey bees after their return to beehive. Zigbee is an IEEE 802.15.4 based specification. It suits for higher level communication protocols used to create personal area network. The technology defined by zigbee specification is intended to simpler and less expensive other than wireless networks like Bluetooth or Wi-Fi.

Traffic spikes:

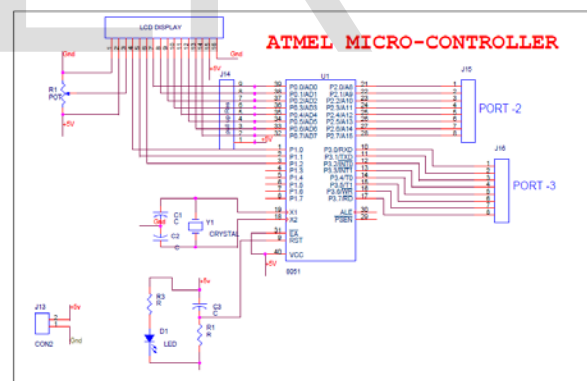
Barrier Gate Arm operators prevent vehicles from entering without proper authorization efficiently managing entries and exits. Traffic spikes frequently used to enforce a directional flow in a single traffic lane such as entrance or exit of particular area.

Dc Motor:

An ac synchronous electric motor is called as DC motor. . The three phase Asynchronous motor type has three electrical connections. The motor used here is a stepper motor that has more poles in stator and reluctance motor which has its poles in the stator and a magnetic core in the rotor.

Atmel Microcontroller:

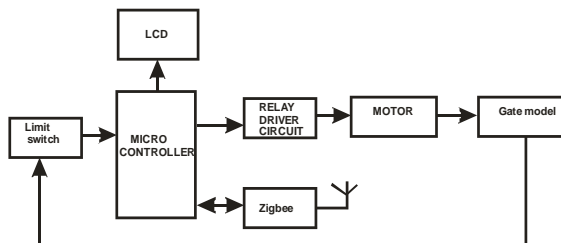
Atmel AVR is a modified hardware architecture machine.AVR instruction set is more orthogonal than those of the most 8-bit microcontrollers.



GSM:

Mobile devices are taking over the IT landscape, making Mobile Device Management (MDM) more important now than ever before and at the top of MDM priority list should be is mobile data security. GSM world says that they have more than 2 billion GSM mobile phones.

Gate section:



IV. PROPOSED SYSTEM

Sensor based railway gate automation system is developed to automate the process of opening and closing of gate at the railway level crosses. The proposed system utilizes zigbee sensors to detect the arrival and departure of trains. The system also implements the process communication with the gate and controls the operation of the gate. Sensors and servo motors are programmed using atmel micro-controller.

Procedure of how the project is working is listed below. When the train is approaching the gate, the zigbee sensor detects the arrival of train and passes the information to the controller, and then it will pass on the information to gate controller system. Then the gates will be closed with a warning alarm to indicate the road users about the approach of the train. As soon as the alarm stops traffic spikes will be activated outwards from the gate which will block the road users to enter the gate at the closing time. Here as the traffic spikes are projected outwards it will not cause any problems to the vehicles which are going outside the gate. After few seconds of traffic spikes activation laser kept inside the gate will check for activity inside the gate. When there is no activity inside the gate, the gates will be closed. Now the gates will remain closed until the train crosses the gate. The other zigbee sensor kept at the other side will detect the train and open the gates. Same mechanism was followed respectively to open the gate too.

Thus the gates will be opened and the way will be set for vehicles on the road to cross the track.

V. CONCLUSION

Level Crossing protection systems is developed using microcontroller to give additional safety shield at manned and unmanned level crossings, through an audio-visual indication to road users. The automatic railway gate controller thus can be used in unmanned level crossings to reduce the occurrence of accidents. Since the design is completely automated it can be used in remote villages where no station master or line man is present. Also it saves lot of times as it is automated. Thus this design is very useful in railway applications.

Hence such a kind of reliable progression is required to eliminate the manual errors and to enhance the effective execution in railway gates.



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