

# Automatic Pedestrian Crossing Mechanism In Railways

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**ABSTRACT**— Railway transportation is one of the most popular and reasonable transportation methods worldwide. Most people in India depend on trains due to which railway stations and Platforms are crowded most of the time of the day. The railway stations are provided with footbridges to help people move across platforms. But this is not as helpful for physically challenged, elderly citizens, passengers with more luggage, etc. Also, there is a lot of accident cases caused when people try to trespass across the railway tracks. This project gives an alternative solution to this problem. The project is about a slider bridge between the platforms which is controlled automatically through GPS signals. The project framework helps everyone to move across the platforms in ease and also saves time and energy.

**Keywords**—Automatic Pedestrian Crossing Mechanism In Railways.

## I. INTRODUCTION

Automatic pedestrian crossing mechanism is a mechanism that we are adopting in railways to make easier especially for physically challenged and elder citizens to cross the intersection platforms. This system works in coordination with National Train Enquiry System(NTES) and GPS tracking system through which exact data on the location of the train can be obtained.

National Train Enquiry System(NTES) coordinates with GPS tracking system which provides the exact data location of the train and here NTES provides all the necessary details about the status of the running train,schedule of the trains such as the exact location of the train,and even the platform number at which the train arrives. The implementations of GPS system which provide more accuracy about the position,velocity,and timing information. For these sensors are provided

as a receiver with antennas that use a satellite based navigation system with a network of 24 satellites in orbit around the earth. Transportation system from flight to automobiles increase the use of embedded systems. New airplanes include advanced avionics consisting of inertial steering structures and GPS receivers that also have full size safety requirements. The use of electric/digital motor controllers,electric automobiles and hybrid motors an increasing number of use of embedded systems to maximize the performance other automotive protection systems encompass Anti-lock Braking System(ABS),Traction Control System(TCS) and automatic four wheel pressure. The Flow chart of the system is show in the following figure 1. The chart states the flow of the information.

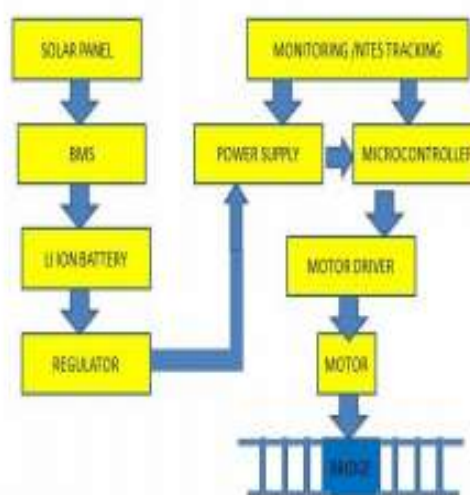


Fig.1: Block Diagram

## II. HARDWARE DESCRIPTION:

### A. GPS ANTENNA AND RECEIVER



Fig.2: External Active Antenna

The signals from the GPS satellites operate in the “semi visible” spectrum of the L1 band (1575.42 MHz) with a minimum signal level of -162.0 dBW. With this



Fig.3:Artes-t-901 Waterproof Gsm Gps Tracker



Fig.4:Microcontroller Arduino

Low signal strength the GPS antenna must be able to acquire the signals from the sky. The antennas are relatively small and are connected to the GPS receiver typically via coaxial cable. Since the GPS signal is very weak the antenna usually amplifies the signal to drive it through the cable to the receiver. A GPS Receiver is an L-band radio processor capable of solving the navigation equations in order to determine the user position, velocity and precise time (PT), by processing the signal broadcasted by GPS satellites

### B. MICROCONTROLLER

A microcontroller (C or uC) is a solitary chip microcomputer fabricated from VLSI fabrication. A micro controller is also known as embedded controller. Today various types Of microcontrollers are available in market with different word lengths such as 4bit, 8bit, 64bit and 128bit microcontrollers. Microcontroller is a compressed micro computer manufactured to control the functions of embedded systems in office machines, robots, home appliances, motor vehicles, and a number of other gadgets. A microcontroller is comprises components like - memory, peripherals and most importantly a processor. Microcontrollers are basically employed in devices that need a degree of control to be applied by the user of the device

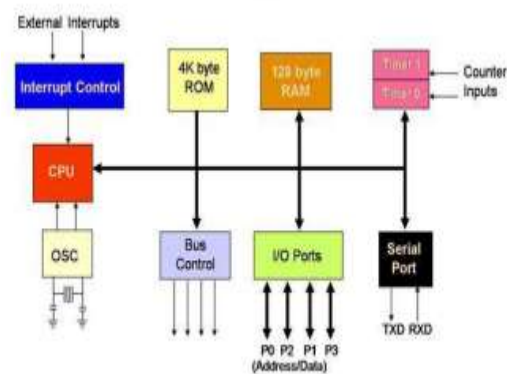
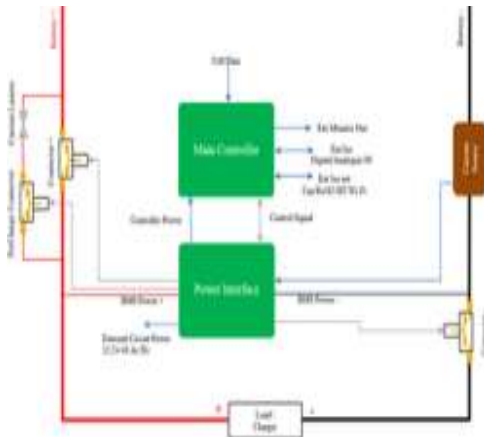


Fig.5:Block Diagram Of Microcontroller

### C. BATTERY MANAGEMENT SYSTEM

A battery management system (BMS) is any electronic system that manages a rechargeable battery (cell or battery pack), such as by protecting the battery from operating outside its safe operating area monitoring its state, calculating secondary data, reporting that data, controlling its environment, authenticating it and / or balancing it. A battery pack built together with a battery management system with an external communication data bus is a smart battery pack. A smart battery pack must be charged by a smart battery charger.



**Fig.6:** Battery Management System

#### D. LITHIUM-ION BATTERY 18650

A lithium-ion battery is a type of rechargeable battery. Li-ion batteries are commonly used for portable electronics and electric vehicles and are growing in popularity for military and aerospace applications in the batteries, lithium ions move from the negative electrode through an electrolyte to the positive electrode during discharge, and back when charging. Li-ion batteries use an intercalated lithium compound as the material at the positive electrode and typically graphite at the negative electrode. The batteries have a high energy density, no memory effect (other than LFP cells) and low self-discharge.



**Fig.7:** Lithium-ion Battery 18650

#### E. VOLTAGE REGULATOR 7805

A voltage regulator is a system designed to automatically maintain a constant voltage. A voltage regulator may use a simple feed-forward design or may include negative feedback. It may use an electromechanical mechanism, or electronic components. Depending on the design, it may be used to regulate one or more AC or DC voltages.

Electronic voltage regulators are found in devices such as computer power supplies where they stabilize the DC voltages used by the

processor and other elements. In automobile alternators and central power station generator plants, voltage regulators control the output of the plant



**Fig.8:** VOLTAGE REGULATOR 7805

### III. SYSTEM OPERATION:

The operation and technology used in this system are listed and described as: A. NTES - NATIONAL TRAIN ENQUIRY SYSTEM National Train Enquiry System (NTES) provides all the necessary details about the status of the running train such as the exact location of the train, schedule of the train, time of expected arrival of the train, departure time of train at every stopping station, status of delayed train, cancelled trains, diverted trains, and even the platform number at which the train arrives. In short, you don't have to be in the blind regarding the status of your train anymore. You can easily spot your train with the help of NTES. Although Indian Railways makes efforts to run trains on schedule, sometimes trains get delayed, diverted, cancelled for numerous reasons. So in order to help the travellers know the status of their trains, Indian Railways set up the NTES. The most important goal of NTES is to provide all the required information to the public regarding the status of their trains.

#### B. RTC (REAL TIME CLOCK)

The purpose of an RTC or a real time clock is to provide precise time and date which can be used for various applications. RTC is an electronic device in the form of an Integrated Chip (IC) available in various packaging options. It is powered by an internal lithium battery. As a result of which even if the power of the system is turned off, the RTC clock keeps running. It plays a very important role in the real time systems like digital clock, attendance system, digital camera etc. In applications where time stamp is needed, RTC is a good option. Using RTC for designing such application has always been a good designer's choice although the beginning might be a bit difficult. While designing any real time system which deals with time, there are two ways of



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