Programmed Track Broken Identification Utilizing Headed LDR and MEMS Gathering

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Abstract : - *In India rail transport occupies a prominent position in providing the necessary transport infrastructure to sustain needs of a rapidly growing economy. Today, India possesses the fourth largest railway network in the world. However, in terms of the reliability and safety parameters, we have not yet reached truly global standards. The main problem about a railway analysis is detection of cracks of tracks and bridges in the structure. If these deficiencies are not controlled at early stages they might lead to a number of derailments resulting in a heavy loss of life and property. This paper proposes a cost effective solution to the problem of railway track crack detection and bridge crack detection utilizing LED-LDR, MEMS and GSM and GPS assembly which tracks the exact location of faulty track which then mended immediately so that many lives will be saved.*

Keywords: LED,LDR,MEMS,GSM,GPS

I. INTRODUCTION

An embedded system is a special-purpose system in which the computer is completely encapsulated by or dedicated to the device or system it controls. Unlike a general-purpose computer, such as a personal computer, an embedded system performs one or a few predefined tasks, usually with very specific requirements. Since the system is dedicated to specific tasks, design engineers can optimize it, reducing the size and cost of the product. Embedded systems are often mass-produced, benefiting from economies of scale.

Personal digital assistants (PDAs) or handheld computers are generally considered embedded devices because of the nature of their hardware design, even though they are more expandable in software terms. This line of definition continues to blur as devices expand.Windows XP operating system and ports such as a USB port both features usually belong to general purpose computers the line of nomenclature blurs even more. Examples of Embedded Systems are given below

▪ Cellular telephones and telephone switches
▪ Engine controllers and antilock brake controllers for automobiles

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2. 2. Design Implementation

The external & internal block diagram of programmed track broken identification utilizing headed LDR and MEMS gathering.
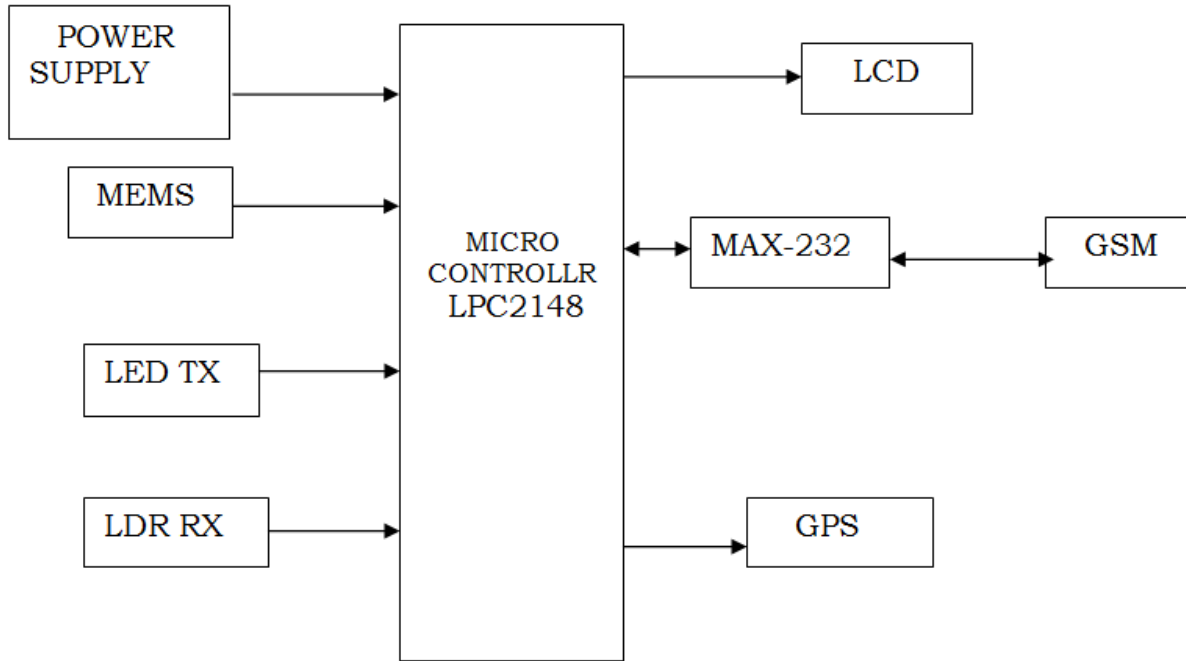
Fig1 : Block diagram of programmed track broken identification utilizing headed LDR and MEMS gathering

2.1 Introduction of ARM Processor:

ARM stands for Advanced RISC Machines. As of 2009, ARM processors account for approximately 90% of all embedded 32-bit RISC processors. ARM processors are used extensively in consumer electronics, including PDAs, mobile phones, digital media and music players, hand-held game consoles, calculators and computer peripherals such as hard drives and router. As of 2007, about 98 percent of the more than one billion mobile phones sold each year use at least one ARM processor. The ARM architecture is licensable. ARM processors are developed by ARM and by ARM licensees.

Prominent examples of ARM Holdings ARM processor families include the ARM7, ARM9 etc. The ARM architecture has the best MIPS to Watts's ratio in the industry; the smallest CPU die size; all the necessary computing capability coupled with low power consumption of which a highly flexible and customizable set of processors are available with options to choose from, all at a low cost. ARM processor features include, Load/store architecture, an orthogonal instruction set, mostly single-cycle execution, a 6x32-bit register, enhanced power-saving design. The small size, low cost, and low power usage leads to one of the most common uses for an ARM processor today, embedded applications.
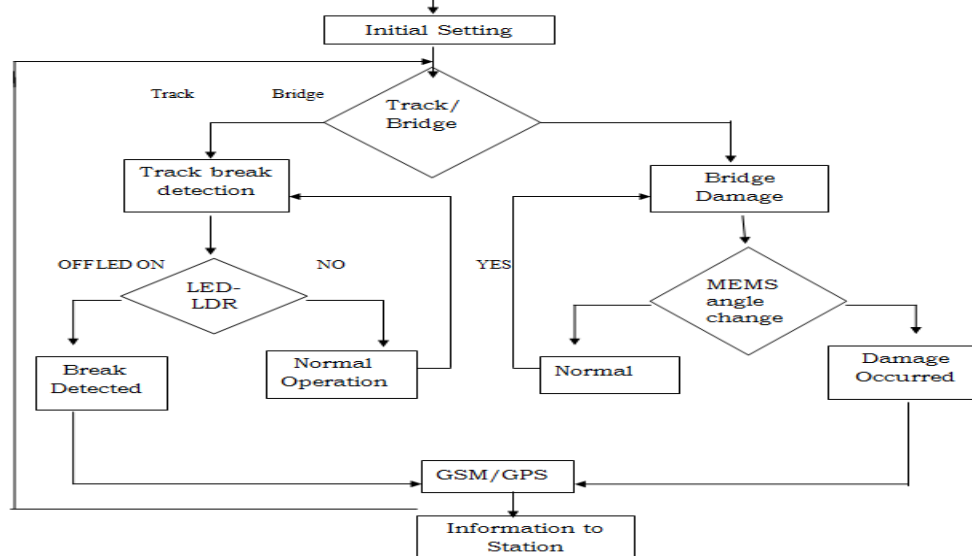
II. FLOW CHART

Figure 2:Flow chat for programmed track broken identification utilizing headed LDR and MEMS gathering
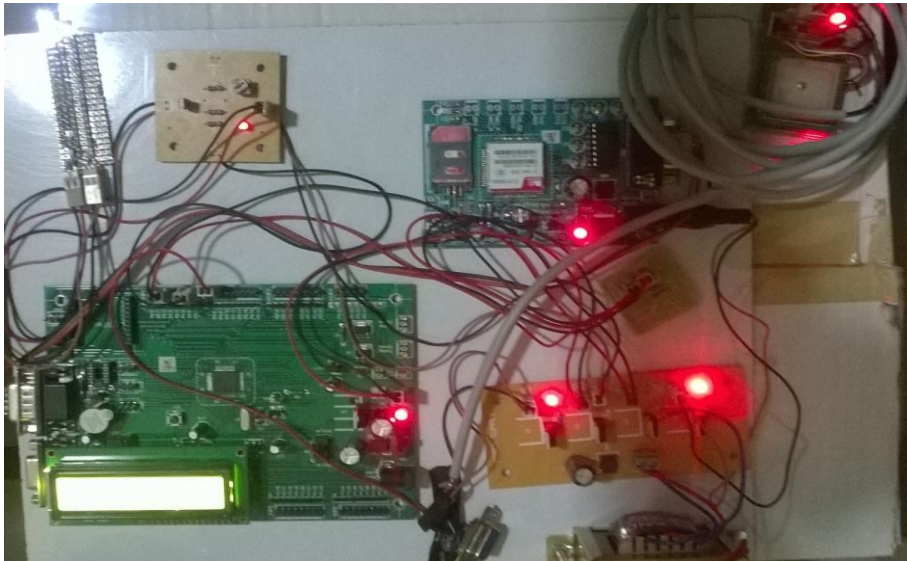
III. RESULTS AND DISCUSSION

Figure 3: hardware implementation

Results:
This project proposes a cost effective solution to the problem of railway track crack and any damages occurred in bridge detection utilizing LED-LDR and MEMS. This information send to the nearest railway station through the GSM and the exact position is find out using the GPS technology then mended immediately so that many lives will be saved.

Discussion:
When the LEDS are ON then the tracks are in normal operation. When the LEDS are OFF then the tracks are detected. When the MEMS angle is not changed then there is not occurred any damages in bridges. When the MEMS angles are changes then the damages are occurred in bridges then the information send to nearest railway station or resisted phone number through GSM. And the location we can be detected trough GPS.

Limitations:
▪ This project is based on the GSM technology. when there is no signals then it will not send the any information to the nearest railway station.
▪ It is based on the power.
▪ Some times if not occurred any damages of bridges but the heavy weight of train the MEMS angle will be changed then it sends information to the nearest railway station.

Future Scope:
In this project we are having any power problems then using solar plates to detect the cracks of the railway tracks and bridges.

IV. CONCLUSION

The project **"Programmed Track Broken Identification Utilizing Headed LDR and MEMS Gathering"** has been successfully designed and tested. Integrating features of all the hardware components used have developed it. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. Secondly, using highly advanced IC's and with the help of growing technology the project has been successfully implemented.

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