

# Earthquake Detection And Time Estimation Using GSM System

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**Abstract-** Earthquake is a problematic disaster. An earthquake is shaking of the surface of the earth, resulting from sudden release of energy. India has very high frequency of great earthquake(magnitude greater than 8.0)however, the frequency of earthquake lies in between magnitude 6.0 to 7.0 .Moderate earthquake create awareness and lead to improvement in construction of low human cost. We have not yet found an earthquake of magnitude 7.0 in the last 40 years. In fact more than 50% area in the country is prone to damaging earthquakes. The north eastern region of the country as well as entire Himalayan belt is susceptible to great earthquake of magnitude 8.0.The main cause of earthquake in these regions is due to movement of indian plate towards Eurasian plate at rate of about 50mm per year. This paper concludes with the selection of right material for design of system.

**Keywords-** Earthquake, magnitude, plates

## I. INTRODUCTION

An earthquake is a geological event inside the earth that generates strong vibrations. When the vibrations reach the surface, the earth shakes, often causing damage to natural and manmade objects, and sometimes killing and injuring people and destroying their property. Earthquakes can occur for a variety of reasons; however, the most common source of earthquakes is movement along a fault.

Some earthquakes occur when tectonic plates, large sections of Earth's **crust** and upper mantle, move past each other.

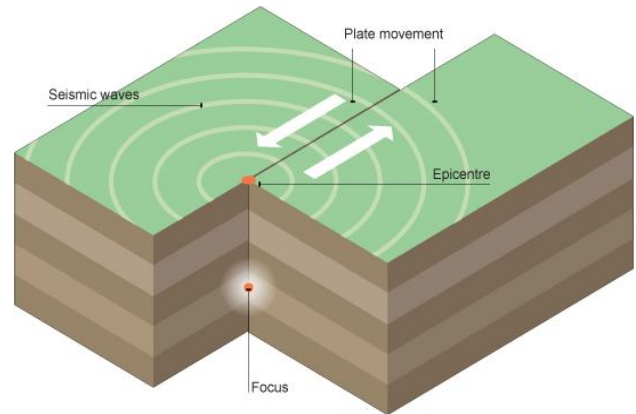


Fig 1. Vibration of earth crust

An earthquake is a vibration or shock that occurs on the surface of the Earth. Earthquakes are usually caused by the movement of the Earth's crusts (Earthplates). The word earthquake is also used to indicate the origin of the earthquake occurrence. The plates always collide and cause earthquake.

## II. SYSTEM ON BOARD

In this paper vibration estimation system using GSM is used. This system consists of ATMEGA 16A microcontroller, LCD (16x2),ADXL335 accelerometer sensor, GSM800A module, power supply.

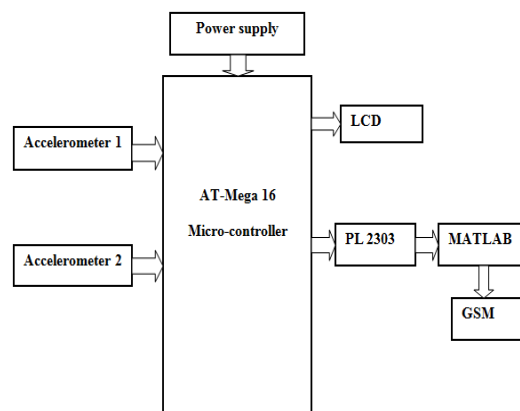


Fig 2.Block Diagram

A. Hardware Specifications

1. Accelerometer Sensor

- 3-axis sensing
- Small, low-profile package
- 4 mm × 4 mm × 1.45 mm LFCSP
- Low power - 350 μA (typical)
- Single-supply operation 1.8 V to 3.6 V
- Sensitivity 270-330 mV/g
- Noise Density XOUT, YOUT 150 μg/√Hz rms
- Noise Density ZOUT 300 μg/√Hz rms

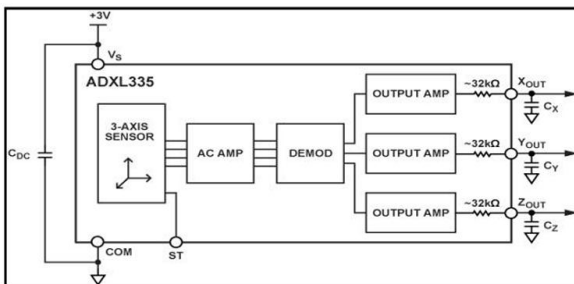


Fig 3. Internal Circuit of Accelerometer

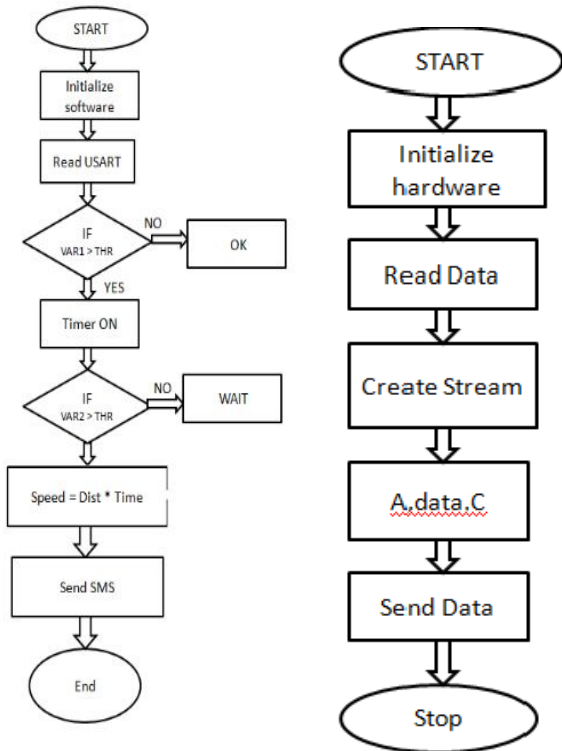
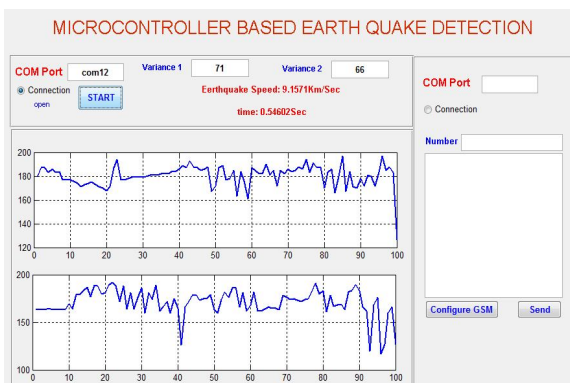


Fig 5.Flowchart



B. Software Specifications

III.CONCLUSION

This paper highlights the importance of earthquake and its awareness. The speed and time estimation of earthquake is important to save human lives. In this study, this system is developed such that an administrator can take immediate action against earthquake disasters.

IV. ACKNOWLEDGMENT

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