Retraction

Retraction: Analyzing the Condition of Gear Module Using Internet of Things (J. Phys.: Conf. Ser. 1916 012181)

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This article (and all articles in the proceedings volume relating to the same conference) has been retracted by IOP Publishing following an extensive investigation in line with the COPE guidelines. This investigation has uncovered evidence of systematic manipulation of the publication process and considerable citation manipulation.

IOP Publishing respectfully requests that readers consider all work within this volume potentially unreliable, as the volume has not been through a credible peer review process.

IOP Publishing regrets that our usual quality checks did not identify these issues before publication, and have since put additional measures in place to try to prevent these issues from reoccurring. IOP Publishing wishes to credit anonymous whistleblowers and the Problematic Paper Screener [1] for bringing some of the above issues to our attention, prompting us to investigate further.

[1] Cabanac G, Labbé C and Magazinov A 2021 arXiv:2107.06751v1

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Analyzing the Condition of Gear Module Using Internet of Things

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Abstract. This project is focused on the use of the Internet of Things Vibration Detection. The assessment of passing motions in a system is vibration control. When unusual vibrations are detected, this project involves developing an SMS alert. It requires a laboratory-based vibration detection experiment when applying the different magnitude of the force. This force causes the sensor's values to change from their initial values. Acceleration values can be seen on the webpage and, if necessary, analysis can be done. The warning signal will be produced considering the maximum magnitude at which destruction is high. Using GSM technology, this message will be sent to various mobile phones. Properly performed, vibration monitoring can be extremely useful in identifying the extent of the damage and assessing the origin in order to avoid damage to structures. We are currently using our key parts, the Arduino microcontroller, the accelerometer sensor, and the GSM module. The Arduino Uno microcontroller's code is written in C++.

1. INTRODUCTION

The main objective of this project is to create a vibration detector using Arduino Uno, Vibration sensor and acceleration sensor that is used to detect the vibration. Whenever it would detect unusual vibrations, then message would be sent on a particular mobile number and readings are displayed in the mobile app. Vibration is a mechanical phenomenon whereby oscillations obtained about an equilibrium point. Vibration detection emphasizes the need for incorporating multi-functional, multi-disciplinary and sectored approach involving engineering, social and financial processes. This can be useful in many sectors to easily detect the effect of vibrations. Vibration analysis techniques are used for detection of fault in the gear system. When vibrations are detected change in the values of sensor takes place. The webpage includes the initial set of values and difference between the value when the operation is performed from the initial value. When the value exceeds a limit, an alert message would be sent to mobile phones and also readings would be displayed in the mobile app. Acceleration is the movement of change in velocity. When vibrations are detected the acceleration sensor values changes according to the vibration. This acceleration sensor value would be displayed in mobile app. This project can be used in many sectors to easily detect the effect of vibration. This project will help us to note the vibrations created and if the reading exceeds the particular limit, then vibration and acceleration values would be displayed in the mobile app through WIFI module [1].
2. LITERATURE REVIEW

[2] stated in the future will become a reality. It'll alter our environment. But the rollout, development, execution, and use of this technology have many barriers to face. The Internet of Things includes a diverse range of participants with a dynamic and changing set of technical, political, and policy considerations. Article on the Arduino interface module to the external world in [3]. Basically, the GSM module SIM900A is used to connect the Arduino Uno board to the GPRS. It is connected to the Arduino Rx and Tx pins. This is a small chip that inserts a SIM card and uses AT commands to perform acts such as calling, sending a text message, or sending data through an HTTP link to a website.

In [4], the NEC Group developed a piezoelectric vibration sensor with a sensitivity approximately 20 times higher than that of previous models. A vibration sensor is a system which matches the human body's sensory and perceptual functions [5-7]. With vibration data produced by humans, products, and environments, the real world is flooded. Our recently designed vibration sensor can collect data from minute waveforms that have been undetectable so far and have therefore not been used [8]. The vibration waveform information collected from the sensors is analyzed by the hub terminals in real time, and the relevant information obtained is transmitted to the cloud service. The output value (or peak value) varies proportionally to the voltage supply, as the ADXL335 output is valuable changes. The performance sensitivity is usually 360 mV/g at VS = 3.6 V. The load sensitivity is usually 195 mV / g at VS = 2 V. The low g bias outcome is also ratiometric, which specifies that the zero g output is principally equal to VS/2 at all applied voltage. The output distortion is not valuable changes, it is specific in volts, since the noise density decreases as the supply voltage rises. This is because, although the noise voltage remains constant, the given value (mV/g) increases. The noise density of the X and Y axis is normally 120 μg/Hz at VS= 3.6 V, while the noise density of the X and Y axis is frequently 270 μg/Hz at VS= 2 V.A tiny, thin, low wattage, required 3-axis accelerometer with frequency voltage outputs is the ADXL335. With a limited wide range of ±3 g, the device tests speed. In tilt wearable electronics, it may calculate the static acceleration of an object, and also tensions actually results from movement, impact, or disturbance. In a discussion he made to Procter & Gamble in 1999, Kevin Ashton, co-founder and associate director of the Auto-ID Center at MIT, first stated the Internet of Things in [9]. Here's how Ashton explains the Internet of Things' potential. The reason is that people have so little time, resources and precision, which all indicates and they're not very useful in gathering information about complex problems. Using information they gather without any help from us, we would be able to detect and measure everything and enormously minimize consumption, reduction, and expenses if we had computer systems that thought everything there was to know stuff. We might understand when it was possible to detect, fix or remember items and if they were new or good at their jobs.

Internet of Things is one of the disruptive trends in [10] that will impact organizations' eventual demise in 2017 and in the past. Many organizations see a huge open door in IoT applications, and efforts are beginning to realize that IoT is guaranteed to boost consumer relations and drive business growth by improving performance, profitability, and reliability on the one hand, and decreasing costs, threat, and stealing on the other. With new customers, IoT demonstrate companies will be remunerated for getting the privilege.

3. DESIGN AND CONFIGURATION

The module includes the Arduino Uno microcontroller configured to the ADXL335 module (connected via CON2) with its ADC inputs, that is, the X-axis = A0, the Y-axis = A1 and the Z-axis = A2. Alter Arduino connectors 2 and 3 are linked via the 5 volts to two devices that are brought back to the ground via R1 and R2 resistors. To increase and decrease the level of the vibration limit, these buttons are used.
As the ADC is 10 - binary digit (bit), a special area of focus was provided with the code. A five-second lag is given for all flow rates and for the process to be stable before these initial value is read. The microcontroller of the Arduino reads data from all 3 accelerometer points and collects it in the EEPROM. It also stores the default limit value of 25 in the Electrically Erasable Programmable Read-Only Memory (EEPROM). The buttons attached to Micro controller pins 2 and 3 work as triggers for rising and decreasing threshold levels for sensitivity differences. The sensor may also be used for monitoring hits and sensations if the level is set at 5 to 8. Users can also evaluate the resultant acceleration using the X2+Y2+Z2 square root formula, where ADXL335 outputs X, Y, and Z, and then compare the result to the alert threshold. If required, changes can be made on the same platform by the user. We used Arduino in this project, which reads and converts the analog voltage of the accelerometer into digital values. Arduino operates the GSM module and calculates and compares values and takes appropriate steps. The next component is the accelerometer that detects the gear mode vibration and produces analog voltages in three axes (X, Y, and Z). As we mentioned earlier, we have used Accelerometer to detect vibrations along each of the three axes so that vibrations are sensed and converted into equivalent ADC value whenever vibrations occur. These ADC values are then read and displayed by Arduino over the message. Arduino contrasts these values with predefined max and min values after discovering real readings. If any variations are detected by Arduino, the values are more or less than the predefined values of any axis in both directions (negative and positive), then the GSM module sends the alert to the registered mobile number in figure 1.

![Figure 1. Arduino Uno microcontroller](image-url)

Sensor data can be displayed and verified on the dashboard that utilizes an API as shown in figure 2.
4. METHODOLOGY

To execute the code on the Arduino Uno board, the following algorithm is used. It helps to accomplish the function of the accelerometer to display data about the Thingspeak API's framework and usage. Some new commands are also used when linking to the Arduino GSM Module SIM900A.

- After transition, set the results.
- Via GSM, display results.
- Link ATCMGI.
- Give a message to.
- AT HTTP URL (API URL).
- Interact with the API of Iot platform.
- Send A0,A1,A2,D11 for.
- Finish of.
5. RESULTS
The results was shown in figure 3 on the smartphone:

![Smartphone SMS Alert](image)

**Figure 3.** Smart phone SMS Alert

6. CONCLUSION
The project was to recognize and generate the alarm when the limit reaches the excessive vibrations. For incident reporting, this can be helpful. It will be applied with the use of both computing devices, making it simple and efficient to execute.

- Emergencies can arrive at a certain time without alert. To be the only way to tackle these unforeseen situations is to be prepared. Accidents are the source of concern and are also probable to provoke an undesired case. In certain cases, emergency shelter may also be required.
- It is important to list user contact details for Sending SMS notifications.
- Even though it is tested on a small scale as it is research lab science, further, it could be applied to real record.

It is seen from all these studies that the material could be used to identify minor motions and to use precautions to prevent hazards. The Arduino movement detector has shown to be an accessible and user-friendly item. Also, regular monitoring of the device is not needed. The system's energy demands are also reduced significantly.

The proposed system is expected to predict the condition of gear module using load cell sensor.

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