Retraction

Retraction: Design and Manufacturing of Internet of Things based Mobile Application Controlled Automobile Screw Jack (IOP Conf. Ser.: Mater. Sci. Eng. 1145 012030)

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This article (and all articles in the proceedings volume relating to the same conference) has been retracted by IOP Publishing following an extensive investigation in line with the COPE guidelines.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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Design and Manufacturing of Internet of Things based Mobile Application Controlled Automobile Screw Jack

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Abstract. The objective of our paper is to design and model a mobile application-controlled automobile screw jack using android programming as an Internet of Things platform. Today's importance on technology expansion has projected a good design and quality product in a lesser time to ease the complicated process of human being. The development of software has become a vital in the digital world to satisfy a number of demands of the user or applications. In order to accomplish the demand of current era, the article has been modelled a design for a mobile enabled hydraulic screw jack system. The description of evolving design and signification of its industrial implication has been shown here. Screw jack used for automobiles is emerging as necessary technology expansion in the industry of automobiles to produce application that allows lifting heavy load on applying lesser effort. The primary importance of the design of automobile screw jack is to reduce human involvement and their contribution to lift a load. Further there is a significance increases in the efficiency of screw jack model and its designs as ergonomically, (i.e.) neglecting of the complex operating as well as positioning of the screw jack by the operators. On usage of hydraulic system and pneumatic system, the system reduces involvement to lift load on basis of the computation calculation. But in this case also complexity in the posture and position of worker during the operation remains the same here. Hence, we have to design a jack for car which is motorised for easiness of use. But somehow in any case of failure in this electronic system, then the jack will be not able to work further manually. In this work, the entire setup is administrated by mobile application which is constructed as MIT app maker and the important functionality of this project is controlled using Arduino Uno which controls all the motors by obtaining signals from the app with help of a wifi module (ESP8266), Arduino builds the code which is encoded into it by Arduino encoder. Entire assembly is propagated by 60 RPM DC motors. Importance of this model is to make system as effortless and fast response in weight lifting, further it reduces the physical fatigue felt by the weight lift operating employee. Experimental results prove that proposed model outperforms the existing Bluetooth based model on terms of the efficiency and accuracy.

Keywords: Internet of Things, Screw Jack, Wifi, DC Motor

1. Introduction
The typical jack alongside the jack types utilized in the auto business gives the viable plan methodology of mechanical fluid powered jack has been talked about in detail. The classification of the jack has been founded on the pressing factor utilized to the jack which is mechanical was enables and make use of vehicle jack and household jacks while the various kinds depend on the pressure driven jack which is considered as container jack and floor jack. After the nitty gritty examination on the predetermined territory as exploration, it was tracked down that the fluid driven jacks are effective and can lift the...
substantial burdens at any changing stature required. The jack was been demonstrated adaptable and simple to work. Standard four-wheeler vehicles Inflation pressure scope of 20-25 psig. The jack which is pneumatic is consolidated and since it tends to be set to change the other wheel (spare). Current advancement in the businesses of car offer wide zone and powerful techniques for lifting and henceforth this gives a decision to case designer to execute.

The regular jack close by the jack types used in the auto business gives the feasible arrangement technique of mechanical fluid-controlled jack has been discussed in detail [1]. The grouping of the jack has been established on the squeezing factor used to the hydraulic jack joins vehicle jack and house jack while the other kind relies upon the pressing factor driven jack which is considered as compartment jack and floor jack [2]. After the bare essential assessment on the foreordained region as investigation, it was concluded that the fluid driven jack was successful and can lift the generous weights at any changing required height [3].

These days fluid driven jacks have become more grounded and solid arrangement accessible in the market to lifting the vehicle, these jacks lift a vehicle with the requirement of less worker exertion and with the utilization of the pressing factor produced inside the chamber through blowers and liquids present inside the chamber for the effective use of the screw jack. The calculation was done to get the specific components of the design of jack and to develop the jack as considerably more dependable than the current one. In existing many model has been utilized to computerize the screw jack activity particularly utilizing Bluetooth and Zigbee. Regardless of numerous profitable of those models, actually exist numerous enhancements for premise of the various boundary based working utilizing web of thing worldview. Thus, in our paper, a creative arrangement is being recommended to computerize this screw jack utilizing portable based application utilizing android stage.

The Remaining paper has been organised as the follows, work related are explained in section 2, then architecture of the proposed automate screw jack using wifi is explained in the section 3 and practical results and effectiveness of our proposed system is demonstrated in section 4 along performance comparison with state of arts approaches on various metric has been explained. Finally, paper was concluded in the section 5.

2. Related works
Here in this section, various automated hydraulic screw system has been examined in details on basis of architectures using Bluetooth and Zigbee models.

2.1. Automation of Screw Jack using Bluetooth
The vehicle should be lifted for certain type of works. This cannot be done manually. To avoid such problem a jack was invented. To make the work easier than a screw jack has been employed with automation module, in this analysis, we have analysed the blue tooth-based automation as motorized screw jack. This model can easily lift the vehicle up and down by using the ON/OFF switch. This helps to reduce the burden of the worker. This project is designed by following blocks, Jack model, DC motor and On/Off switch.

3. Proposed Model
This section provides a formal definition of the component and automated approach of the screw jack specific framework for lifting of the heavy vehicles. The model has been carried out on the following important functional components and its specification.

3.1. Functional Component and Specification

- **Arduino.** Arduino is a microcontroller for established for portable embedded system towards small scale applications. The microcontroller has been considered as open-source electronic prototyping platform to interactive operation. Arduino IDE is employed for writing and then uploading the structured codes to chip board. It uses a USB cable to flash the code to the controller without any programming interface. The Arduino boards categorized based on its functionalities of the application. The figure 1 represents the circuit specification of the Arduino UNO.
The Arduino Uno, a robust microcontroller circuit chip based on ATmega328P category. This consist of fourteen digital pins for input/output with six analogy inputs, the one USB connection, a header, a 16 MHz resonator which is ceramic and a reset button. It contains local variable, formal parameters and global variables for programming the micro-controller to connect with other devices on varied functions. UNO boards simply connect to the application or model with a USB connector with a AC-to-DC adapter.

- **IoT Module.** An IoT module is a type of RS485 which stream different type of sensor data and transmit the cloud hosted software platform which fabricated as small electronic device. The device has been embedded in hardware objects, electric machines and electronic component connect to wired or wireless networks to collect the sensed information. Those sensed information sends and receives data to the cloud hosted platform.

  Major functionalities of the IOT module composed of utilities like low power consumption and it has capacity to connect wide variety of the devices using watch dog functions. Its ability is to connect the multiple slave system with easy installation. Further it has capability of fault detection on connection issues. It has built in amplifier on weak cellular connectivity area. It is categorized under quad band 2G cellular technology [4]. The IoT Module has been enabled in portable device towards sharing data, locations, emergency message and web data using various protocol and security mechanism.

![Figure 1. Arduino UNO Circuit](image1)

**Figure 1.** Arduino UNO Circuit

The figure 2 represents the IOT module for the data communication to the application server.

- **Relay.** A relay considered as separate hardware used for device switching; it has been fixed as an electrical switch that uses an electromagnet to transmit the switch function from the off condition to on condition position instead of a manual operating of the switch. The figure 3 represents the relay circuit consist of the 4 operations.

![Figure 2. IOT Module for Data Communication](image2)

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Relay circuit consumes relatively small amount of power to operate the switch between the states to control electrical operations and it consumes less power [5].

### 3.2. Working Principle and Block Diagram

In this prototype, model is designed with Driver circuit with relay, IOT APP (remote), Dc motor and jack model. Either the battery power or direct power supply is used to control the jack motor. The mobile keypad is used for controlling the direction for the motor that was coupled with the spur gear. Relay is directly connected with the DC motor [6].

![Block Diagram of the proposed model](image)

When the start key is pressed the motor is operated in forward direction and the when the stop key is pressed the motor stops automatically. The forward and reverse button in the remote is used to operate the motor is required directions. IOT app Using to Control All Operation Using Wireless Communication [7]. The functional block diagram of our work is represented on the above figure 4. The current flows on support of the relay switch as it has been enabled with electric circuit on screw jack.

The IoT device consists of wifi module is enabled to receive and send the data collected by the sensor with multiple modes and storage utilities in the screw jack. The data transmitted to server from the IOT module will be processed and accessed in the smart phone connected through wifi module, which is responsible for the data connectivity and sharing using the mobile app using android. The Arduino is important component which controls the entire device prototype.
Figure 5: Drawing for design and fabrication of App Controlled Automobile Screw Jack

The figure 5 provides the design diagram of the proposed model. Important functioning calculation of the system is depicted as follows:

- Mobile application used for display the location and user information is connected using wifi module for effective data communication between the server.
- Screw Jack calculation has been enabled in this work.
- The IoT module has been enabled to send and receive sensor information from GPS during the emergency situation and sends information to mobile and server.

4. Experimental results

The experimental analysis is carried out on the proposed model with set of action which is to assemble the lifting of the screw jack using android application as follows

Figure 6. Input Screen of Mobile Application

The proposed device has been designed and implemented using Arduino UNO including a tri-axial accelerometer for sensing of the screw jack weight and a Wifi module has been used to transmit the signal to the server and mobile based on the significance of the operation. This device has been circuited with chip embedded on wheel to screen the weight of the vehicle on the puncture or on other inspection of the vehicle services [8]. The mobile application of the Input Screen has been displayed in the figure 6.

The data that is continuously being fed to cloud is simultaneously received by mobile application using android. The figure 7 provides the mobile application interface projecting vehicle details.
Figure 7. Mobile Application Interface providing Sensor Details

In order to operate the weight lifting module mounted on the floor, user has to tap the device with mobile keyboard using app to control circuit to transmit the location coordinates to the server and mobile application. Device is more flexible and reliable to dynamic situation in form of size and functionalities. The sizes and specification of the model make it flexible to incorporate to the any kind of vehicle. Further due to portability and size, it is discrete and complex to monitor.

5. Conclusion
We designed and implemented a portable device as weight lifting application for any vehicle type using internet of things and android application. It has been configured with weight monitoring tools as weight monitoring circuit on inclusion of data module. Further wifi module has been used to transmit the data operating the coordinates to the server and mobile app using protocols for data connectivity and transmission.

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