IJAREEIE

e-ISSN: 2278-8875
p-ISSN: 2320-3765

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

Volume 12, Issue 4, April 2023

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.317

e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 8.317|

||Volume 12, Issue 4, April 2023||

|DOI:10.15662/IJAREEIE.2022.1204027 |

Location Tracking Device with Electric Shock for Women Safety

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ABSTRACT: Due to physical/sexual abuse and a fear of violence, women's safety has become a serious issue in today's society. They are unable to leave their homes at any moment. Despite the fact that technology is rapidly advancing and new gadgets are being created, women's and girls' challenges persist today. They frequently bridge racial, religious, political, and cultural barriers to advance liberty. Women and men are currently in direct competition with one another in every sphere of society. Yet, the women are afraid of being harassed, taken hostage, and killed. These various forms of female harassment are on the rise.So, it is crucial to safeguard women's safety. Many modules, including GPS, GSM, a Arduino UNO, a shock circuit, buttons, etc., are included in this system. In order to control everything above, this device interacted with the embedded system. When a device is turned on, it uses GPS (Latitude & Longitude) to determine the victim's present location before sending that information through GSM to the registered contacts. Also, the jacket is equipped with an electric shock to harm the assailant as a quick fix.

KEYWORDS: GPS, GSM, Security, Arduino UNO, Location, Jacket, Shock circuit.

I. INTRODUCTION

The future of a nation is largely shaped by its women, who are the foundation of any economy. She is now managing work and home concurrently while still attending to her domestic responsibilities, sharing an equal role with males in the process of economic development. But, the only thing on every girl's mind is the day when they will be able to walk around freely, even at strange hours, without having to worry about their safety. In order to protect women, this project recommends a novel technique. The goal of this project is to provide women with security so they never feel powerless. When travelling at strange hours or when they feel helpless, users of an electronic women's safety jacket can utilise it to defend themselves. Our initiative focuses on women's security because it's been noted that there are several incidents of women being harassed every day. We came up with the concept of employing an Arduino ATmega328 module to create a project focused on women's security. The Arduino ATmega328 module receives signals from the GPS system, which has real-time location data, and then the controller authorises the GSM system to send the Alert Message to the predefined numbers. Additionally, the shock circuit in our jacket is used to harm the aggressor in the event of an attack in order to protect the victim.

PROBLEM STATEMENT:
Women are unable to protect themselves and use mobile devices in an emergency. She is also unable to be set on alert so that they may promptly tell the family members and friends their whereabouts when they are in danger.

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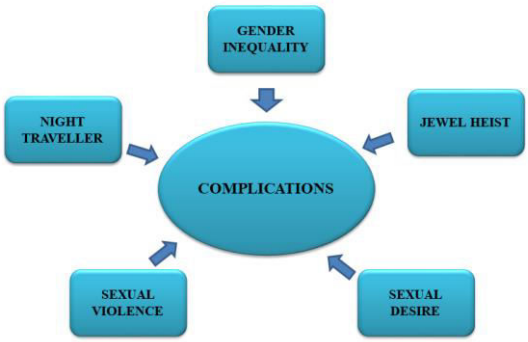

II. EXISTING SYSTEM

Guardian device for women [1] A wristband equipped with an IOT module, GPS, GSM, and sensors such a pulse sensor and a neurostimulator is employed. An embedded spy button camera ought to be used to record the attacker's image. Moreover, a solar-powered battery is employed. The system's primary flaw is that it relies on an active network, which raises serious concerns in remote areas. Another flaw is that it relies on solar energy, which is not always accessible.A Novel Approach to provide protection for women by using smart security device[2] When the victim presses the emergency switch, it monitors the victim's heart rate, temperature, and accelerometer; when these parameters rise over a predetermined level, it tracks the victim's location and sends a message to saved phone numbers. The system's shortcomings include the fact that it can send messages to carers in conditions other than emergencies, such as heat, anxiousness, and racing.Protection for Women using IOT smart device with Location and parameters[3] This system's changeable gadget detects position and senses body parameters before sending information to a registered phone. Moreover, it features a wi-fi shield that connects linked devices to the internet via mobile phones. Children can't manage it easily, and when the battery in a phone becomes low, it turns off. The internet is the foundation of this system in its entirety.Smart Wearable Device for Women Safety Using IoT [4] they utilise a Raspberry Pi as the microcontroller in this, but it has some restrictions on how much it costs, how it can use modules, and how it can access analogue data. To deal with analogue signals, it needed an extra ADC chip. The board is harmed by erroneous pin connections. In the current system, there is no immediate remedy for an emergency. This paper focuses on jackets with electric shock and alert message with the victim's location as women's safety devices.

COMPONENTS:

Arduino UNO, GSM Module, GPS Module, MOSFET, Shock Circuit, Push Button, and Lithium Ion Battery are the components used in our project. The components are described as follows:

ARDUINO UNO:

The Arduino Uno is an open-source microcontroller board created by Arduino.cc and first made available in 2010. It is based on the Microchip ATmega328P microprocessor. A variety of expansion boards (shields) and other circuits can be interfaced with the board's sets of digital and analogue input/output (I/O) pins. The board features 6 analogue I/O pins, 6 digital I/O pins, and 14 digital I/O pins, six of which can be used for PWM output. It can be programmed using the Arduino IDE (Integrated Development Environment) with a type B USB cable. A barrel connector that can handle voltages between 7 and 20 volts, such as a square 9-volt battery, or a USB cable are both options for powering it. It resembles the Arduino Nano and Leonardo in certain ways.The hardware reference design is made accessible on the Arduino website and is given under a Creative Commons Attribution Share-Alike 2.5 licence. There are additional layout and production files available for various hardware versions.

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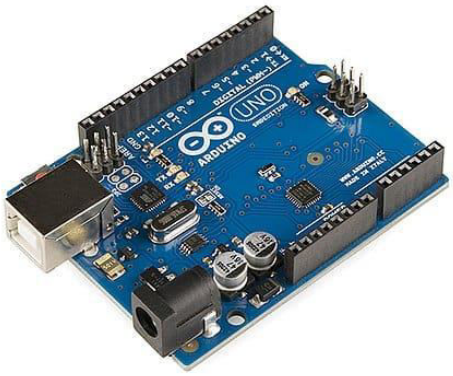

ARDUINO UNO[5]

GSM MODULE:

Using a GSM wireless network, a GSM modem is a wireless modem. Either the 900 MHz or the 1800 MHz frequency band are used for operation. Both voice calls and data transfer speeds are supported. Similar to mobile phones, it needs a SIM (Subscriber Identity Module) card to start communicating with the network.Also, they can be identified by an IMEI (International Mobile Equipment Identity) number, just like mobile phones.For interaction with the processor or controller, which is done through serial transmission, the MODEM needs AT commands. The processor/controller is the one who issues these orders. When the MODEM gets a command, it responds with a result. The processor, controller, or computer can send any of the AT commands that the MODEM supports in order to communicate with the GSM cellular network.

GSM MODULE [6]

GPS MODULE:

Location and timing data are provided by the Global Positioning System (GPS), a satellite-based navigation system. Anyone with a GPS receiver and clear visibility of at least four GPS satellites can use the system without charge. By accurately timing the GPS satellite signals, a GPS receiver can determine its location. The use of GPS has increased recently, and it is now a standard feature of smartphones.Used for 3.3 V and 5 V microcontrollers, ready for use in solder-free breadboard projects. In addition to receiving almanack data from the satellite, GPS receivers also use triangulation to determine their positions by first determining their distance from other visible satellites. Many pieces of information, such as position (latitude and longitude), altitude, speed, and time, are included in the data sent by the GPS receiver.

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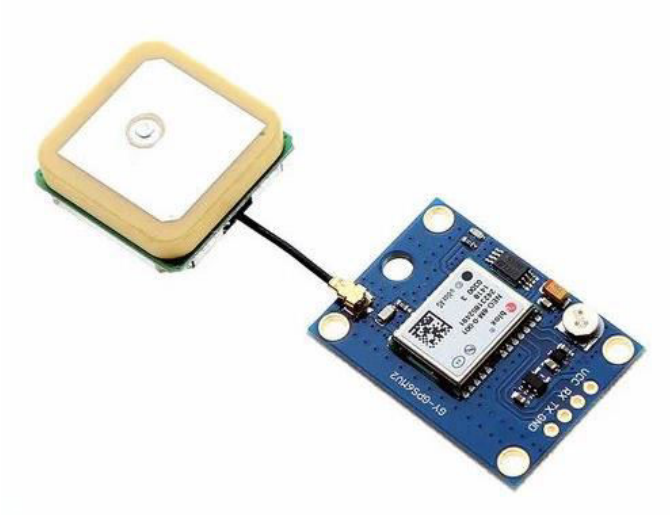
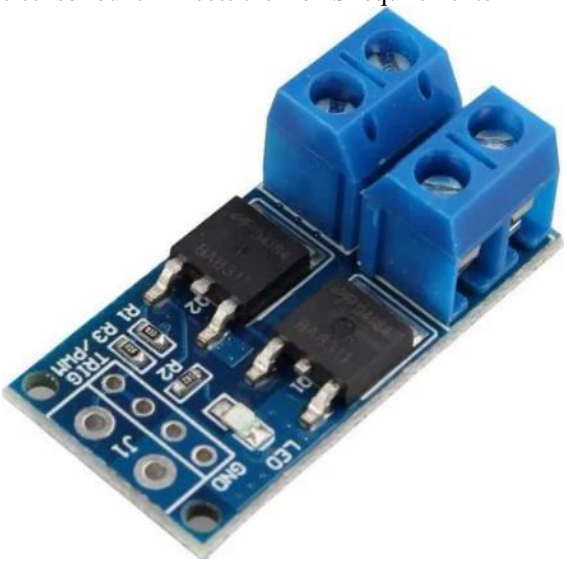


GPS MODULE [7]

MOSFET:

A MOSFET, or metal oxide semiconductor field-effect transistor, is a device used in circuits to switch or amplify voltages. It is a current-controlled device with 3 terminals that belongs to the field-effect transistor family and has the following connections: source, gain, and drain.A MOSFET transistor's main function is to regulate the voltage and current flow between the source and drain. In power devices that need high-speed switching, voltage driving, and low loss, MOSFETs (Metal Oxide Semiconductor Field Effect Transistor) have a track record of producing low current and low withstanding voltage. When compared to a planar construction, the adoption of a trench gate structure drastically lowers the low on-resistance (the resistance value in the area in which the drain current is flowing between the drain and the source).The characteristics of MOSFET chips with trench gates, use a connector connection for the wiring of the gate source signal, temperature sensor built-inmeets the RoHS requirements



MOSFET [8]

LITHIUM ION BATTERY:

A lithium-ion battery, often known as a Li-ion battery, is a type of rechargeable battery that stores energy by the reversible reduction of lithium ions. A standard lithium-ion cell's anode (positive electrode) is typically constructed of the carbon-based material graphite. Typically, a metal oxide serves as the cathode (negative electrode). Typically, a lithium salt in an organic solvent serves as the electrolyte. It is the most common kind of battery used in electric vehicles and portable consumer gadgets. Also, grid-scale energy storage as well as military and aerospace applications make major use of it. Li-ion batteries outperform other rechargeable battery technologies in terms of energy density, self-discharge, and memory effect (although a small memory effect reported in LFP cells has been traced to poorly made cells).The different varieties of lithium-ion batteries have different chemistry, performance, cost, and safety properties. Intercalation compounds are used as active ingredients in the majority of commercial Li-ion cells. Graphite

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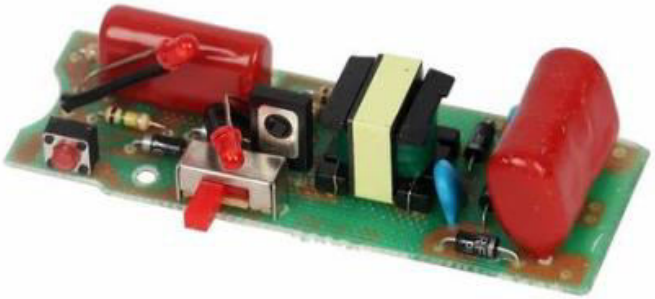
is typically used as the anode or positive electrode, while silicon-carbon is becoming becoming more popular. It is possible to construct cells that emphasise power density or energy.

LITHIUM ION BATTERY [9]

SHOCK CIRCUIT:

When the victim clicks the push button, the 2000V shock circuit shocks the attacker as a quick fix for the victim.



SHOCK CIRCUIT [10]

PUSH BUTTON:

A push switch (button) is a momentary or non-latching switch that, when activated physically, modifies the state of an electrical circuit for a brief period of time. Immediately after, an automatic device (such as a spring) moves the switch back to its default position, reestablishing the circuit's initial state. The two are as follows:When pushed in, a push-to-make switch permits current to flow between its two contacts. The circuit is disrupted when the button is released. Normally Open (NO) Switch is another name for this kind of switch.A "push to break" switch accomplishes the exact opposite; it breaks the circuit when the button is pressed even if electricity can still flow through it when it is not depressed. These switches are also referred as a Normally Closed (NC) Switch.

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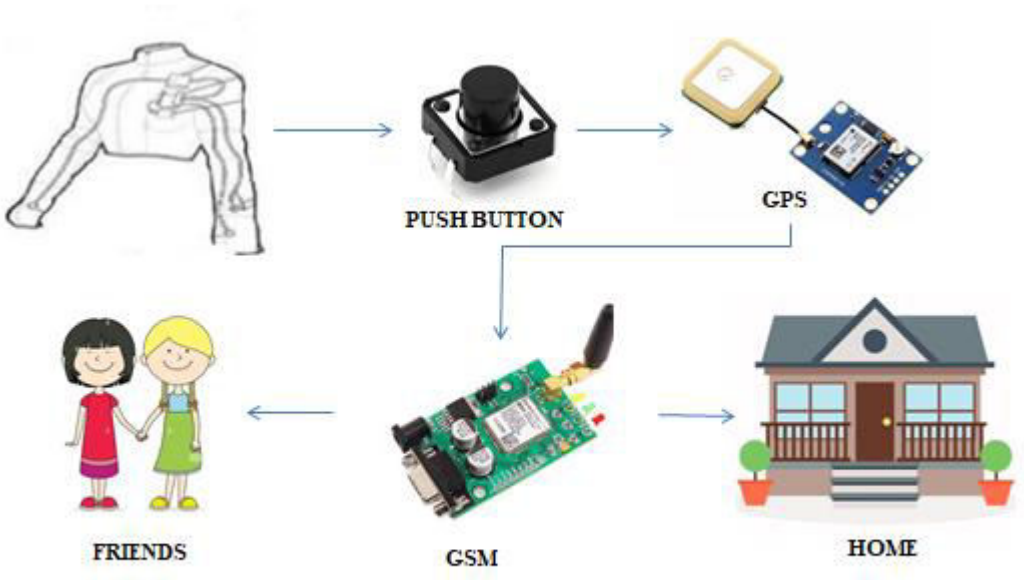
PUSH BUTTON [11]

PROPOSED SYSTEM:

The device in this proposed system was created using an Arduino UNO. This module has 28 pins in total. In our project, a switch is utilised. When the switch is hit, circuit turns on and begins tracking the location using a GPS module. A latitude and longitude-based SMS alert is then sent to the predefined numbers and the shock circuit will be activated when the assailant attacks the lady at which point it will be employed in defense to hurt the attacker.



The above diagram shows the diagrammatic representation of the actual working of the proposed system.

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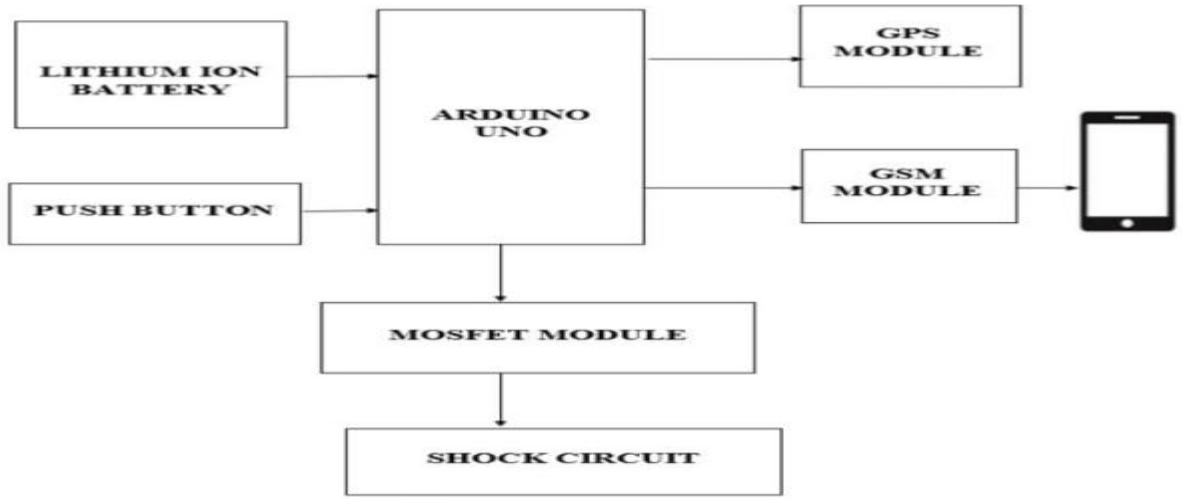
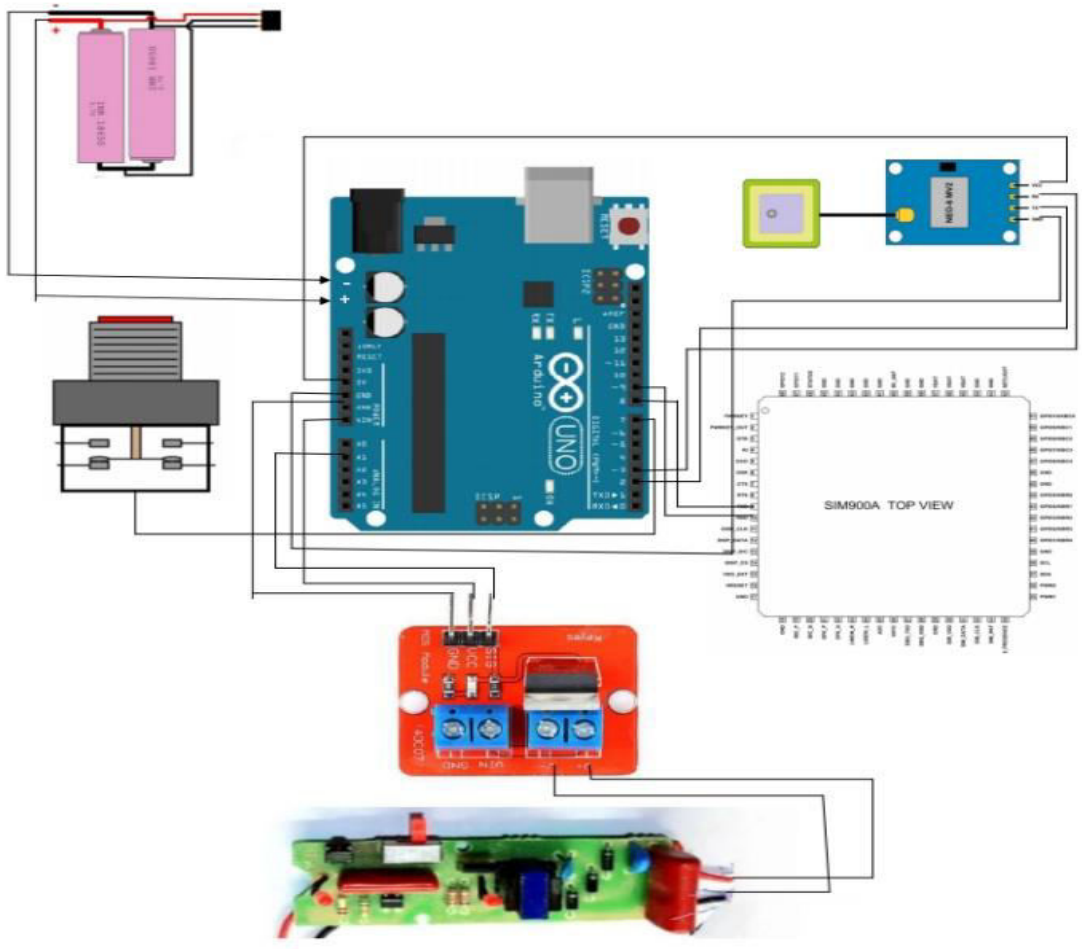
BLOCK DIAGRAM:



CIRCUIT DIAGRAM:

The victim's location can be tracked via GSM and GPS, and a shock circuit can be used to provide an immediate fix in an emergency.The following circuit diagram:



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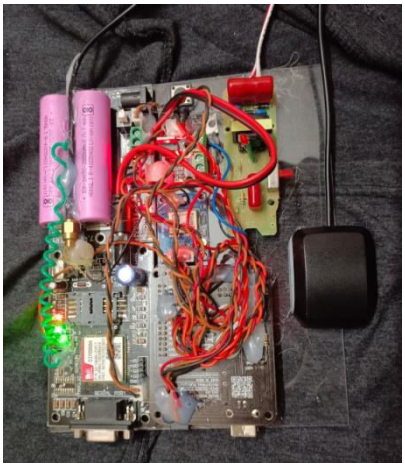
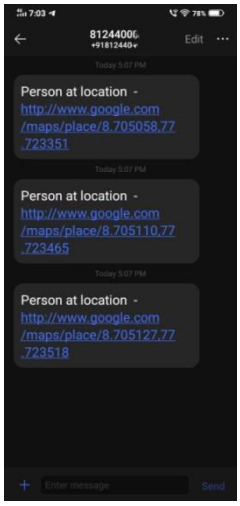
III. RESULT AND DISCUSSION

Women's safety jackets that convey location information via GPS.It is excellent for security-related purposes. In order to defend oneself, the shock circuit is employed to hurt the assailant.



Location tracking device with safety jacket with location electric shock tracking device and electric shock Message from the location tracking device



Location tracking gadget with electric shock is depicted in figure 1.The safety jacket for women in Figure is equipped with an electric shock and a position tracking device.The figure depicts the message sent to the registered number when the press button is pressed.The victim's position is communicated to the registered number when the push button is pressed, and the attackers will be shocked.

IV. CONCLUSION

The ideas provided here being first of its kind plays a crucial role for ensuring the Safety of Women that is automatically the fastest way possible. The proposed design will address significant challenges that women have experienced in the recent past and will assist in their resolution through technologically sound devices with more research and invention, this concept could utilized in a variety of security domains.

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FUTURE SCOPE

1. The system also supports the usage of cameras. Future women's safety will benefit greatly from this endeavour.
2. This gadget can be built in a size that only allows for hand band use.The system is more stable and trustworthy thanks to the advancement in technology. Because the new modules offer functionality that improves safety and security.
3. Wearable technology is fantastic, especially activity trackers.

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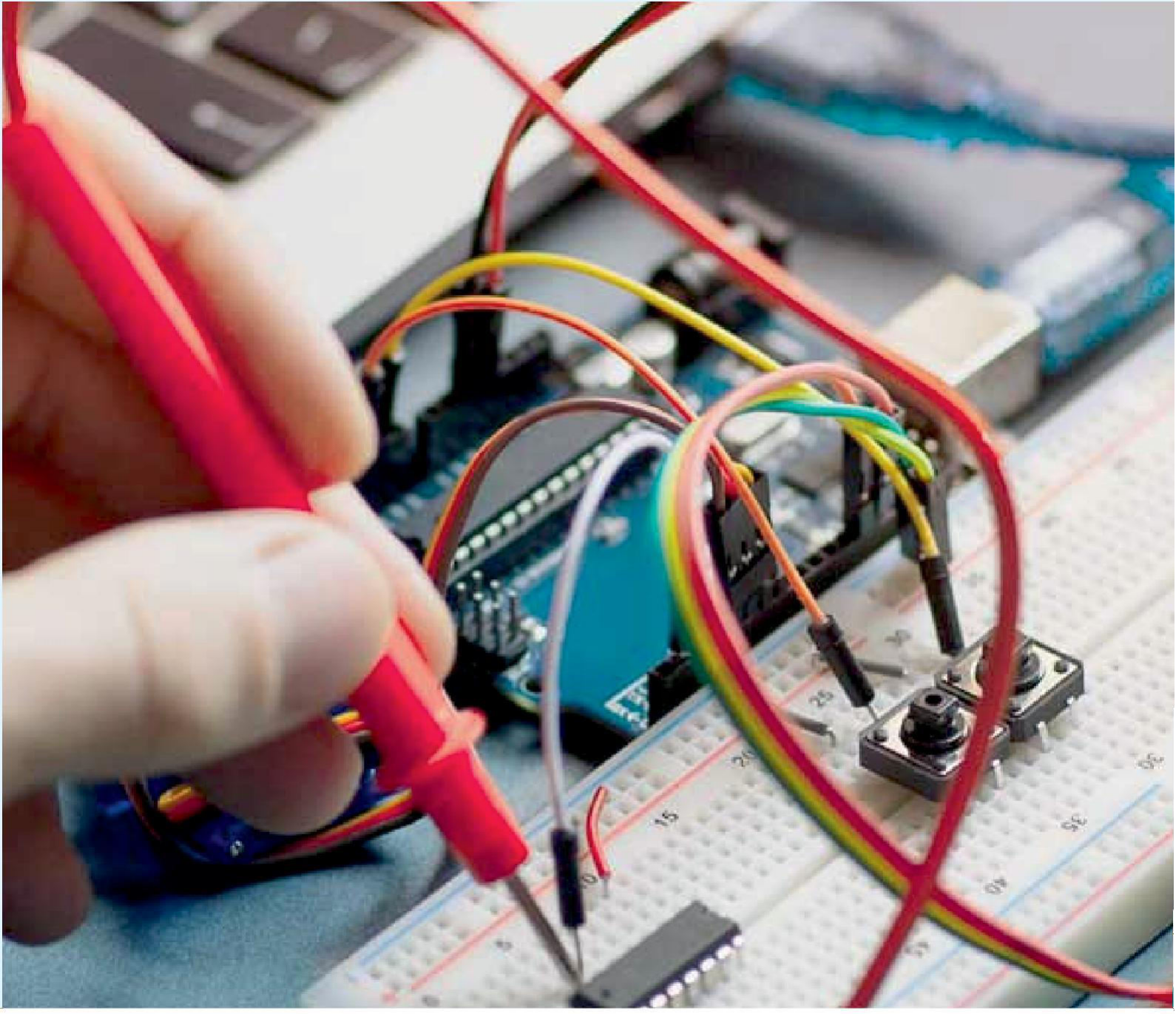

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