



LASER SECURITY SYSTEM

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Abstract: The Laser Security System is a revolutionary intrusion detection solution that utilizes laser technology to provide unparalleled security and protection. This system is designed to detect and alert homeowners or authorities of potential security breaches, providing a robust defense against intruders. The system operates by projecting a laser beam across a designated area, creating an invisible barrier that detects any disruptions or objections.

When an intruder crosses the laser beam, the system triggers an alarm, alerting the home owner or authorities of the potential threat. The laser security system boasts several key features, including high sensitivity detection capabilities, customizable alarm setting, integration with existing security systems. The benefits of the laser security system are multifaceted. It provides homeowners with a reliable and effective means of protecting their property, reducing the risk of theft, vandalism, and other security breaches. Additionally, the system's advanced technology and customizable features make it an attractive solution for commercial and industrial applications.

Keywords: LDR module, Aurdino NANO Board, Buzzer.

I. INTRODUCTION

In our daily lives, safety is a major concern. Every person requires a sense of safety. Our security pattern includes an access control system for doors. Traditional no longer as secure as they were once. Anyone can gain access by breaking these locks. We need to create a system that will assist 24 hours a day, seven days a week. Only authorized individuals have access to restricted areas.

A Laser Security System is a cutting-edge technology designed to detect and prevent intrusions by creating an barrier using laser beams. This system consists of a laser transmitter, receiver, and control unit, which works in tandem to detect even the slightest movement within a protected area. With its high accuracy, reliability, and flexibility, border security, industrial security, commercial security, residential security, and military security. By providing a robust and effective security solution. Laser security systems help protect people, assets, and critical infrastructure from potential threats.

Arduino nano is in charge of the entire system. The traditional lock and key mechanism has long been susceptible to issues such as lost or stolen keys, unauthorized duplication, and inconvenience associated wit managing multiple keys. In contrast, laser security system offer a high security.

II. LITERATURE SURVEY

SL. NO	AUTHOR NAME	TITLE	ADVANTAGES	CONCLUSION
1.	B. Giri Raju, T. Snehitha, P.Keerthana, K.Bayapu Reddy (2022)	Design and Implementation of Laser Security System	<ul style="list-style-type: none"> Contains reliable features different pattern for every human being. High accuracy for authentication. 	A enhanced method of executing and designing of a laser security system using GSM technology.
2.	Ravishankar.H,Sudha M,Manjesh,S,Sudarshan,Su bhash Surendarkumar KR(2024)	Implementation of Laser Security System.	<ul style="list-style-type: none"> Improved real time monitoring capabilities. Enhanced security measures. 	Implementing a door access system using aurdino which make use of laser to identify intrusion at our homes,office,shops etc.,
3.	Ajit Kumar Patro, Kanha Mirdha, Subha Prasad Behera, Piyush Patel,Abhishek Tripathy(2024)	Design and Analysis of LDR based laser security system.	<ul style="list-style-type: none"> No manual errors. Very faster communication. 	Implementing and designing a security system for door locking purpose based on laser.GSM technology,monitoring and alarm system.
4.	Harshal Hemanel, Debarati Sen .(2022)	Laser based security system for homes.	<ul style="list-style-type: none"> It can only be operated by authorized user And no need to remember any password. 	With the identity fraud in our society reaching unpredicted proportion and with an increasing emphasis on the emerging automatic personal identification. Laser security system useful.
5.	Mr. K. Dhanunjaya, Ch Sampoorana, Ch .Ramya,G Vengaiah,A Sandeep Kumar A, Dinesh Krishna(2024)	Laser based security system.	<ul style="list-style-type: none"> Most secured and accurate than the traditional locks. 	Fingerprint ,it is essential a challenging pattern recognition problem where two competing error rates: false accept and reject rate to be minimized.

III. METHODOLOGY

- when the laser is blocked by an intruder, the alarm goes off, making a loud beep sound that alerts the owner, even if they're asleep When the laser is blocked by an intruder, the alarm goes off, making a loud beep sound that alerts the owner, even if they're asleep. This instantaneous response ensures that the homeowner is immediately notified of potential security breaches, allowing them to take swift action to protect their property.
- The loud beep sound is designed to be jarring and attention-grabbing, making it impossible to ignore. This is particularly important for homeowners who may be asleep or distracted, as it ensures that they are quickly alerted to potential threats

IV. BLOCK DIAGRAM

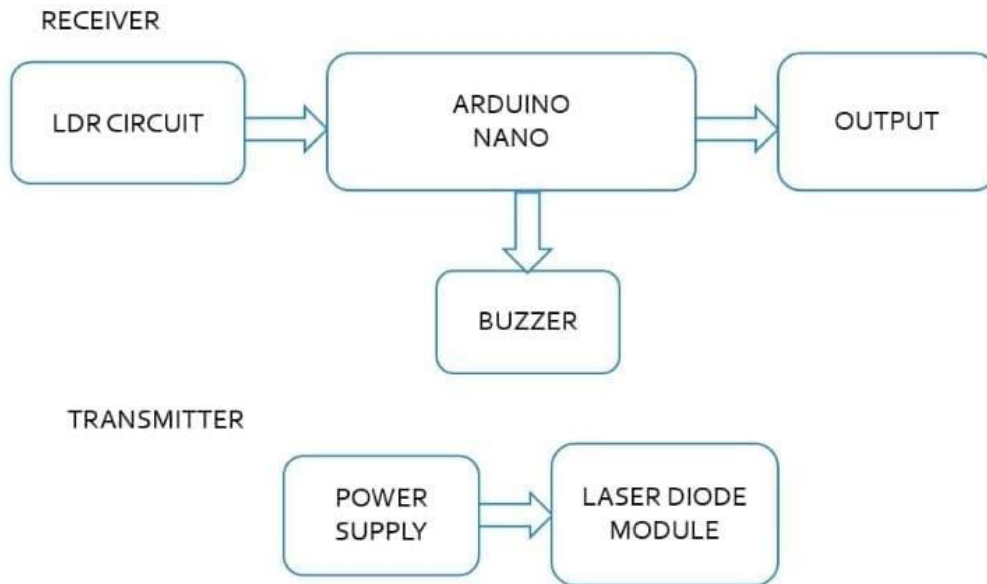


Figure 1:BLOCK DIAGRAM OF RFID BASED SMART BILLING TROLLEY.

V. FLOW CHART

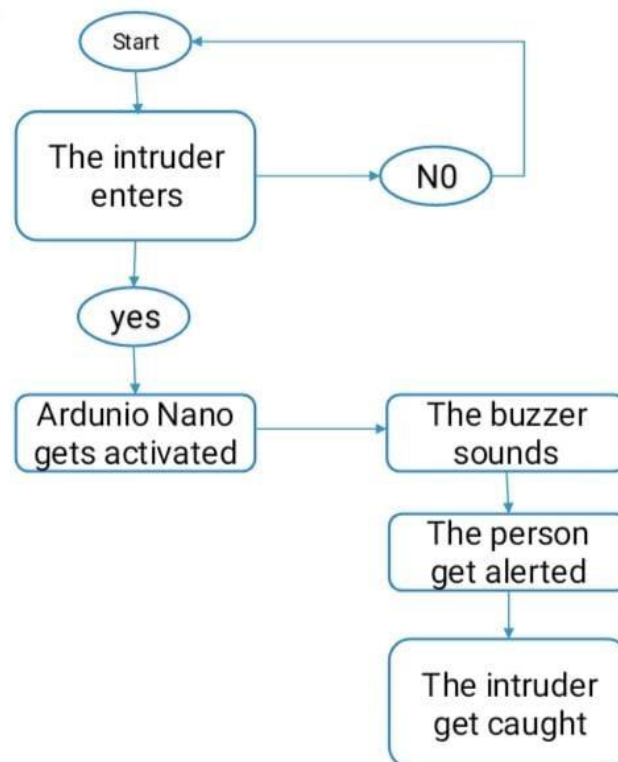


Figure 2:FLOW CHART OF RFID BASED SMART BILLING TROLLEY.

VI. CIRCUIT DIAGRAM

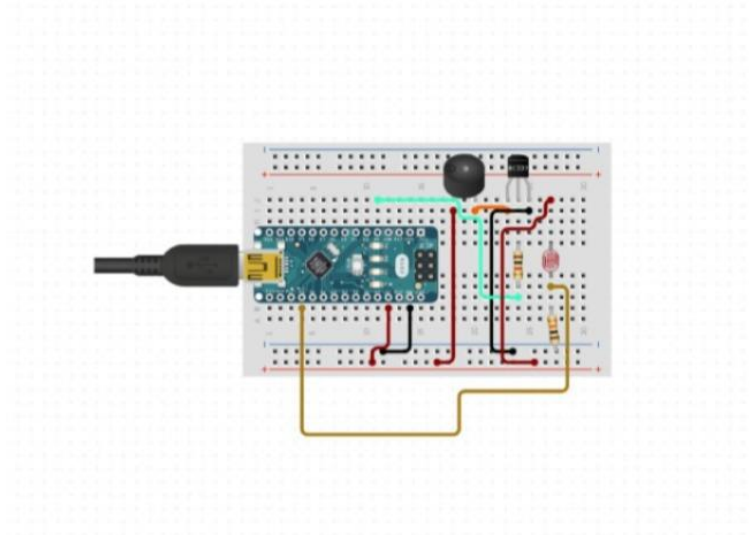


FIGURE 3:FLOW CHART OF RFID BASED SMART

HARDWARE USED

1. **ARDUINO NANO BOARD:** Arduino NANO is a microcontroller board based on the ATmega328P. There are total 30 pins out of which 22 digital input/output pins. It allows users a simple pathway to creating interactive objects that can take input from switches and sensors, and control physical outputs like lights, motors.



2. **LDR MODULE:** The LDR Sensor Module is used to detect the presence of light / measuring the intensity of light. The output of the module goes high in the presence of light and it becomes low in the absence of light. The sensitivity of the signal detection can be adjusted using a potentiometer.



LASER LIGHT: Laser, a device that stimulates atoms or molecules to emit light at particular wavelengths and amplifies that light, typically producing a very narrow beam of radiation. The emission generally covers an extremely limited range of visible, infrared, or ultraviolet wavelengths. Many different types of lasers have been developed, with highly varied characteristics.



3. **BUZZER MODULE:** A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric (piezo for short). Typical uses of buzzers and beepers include alarm devices.

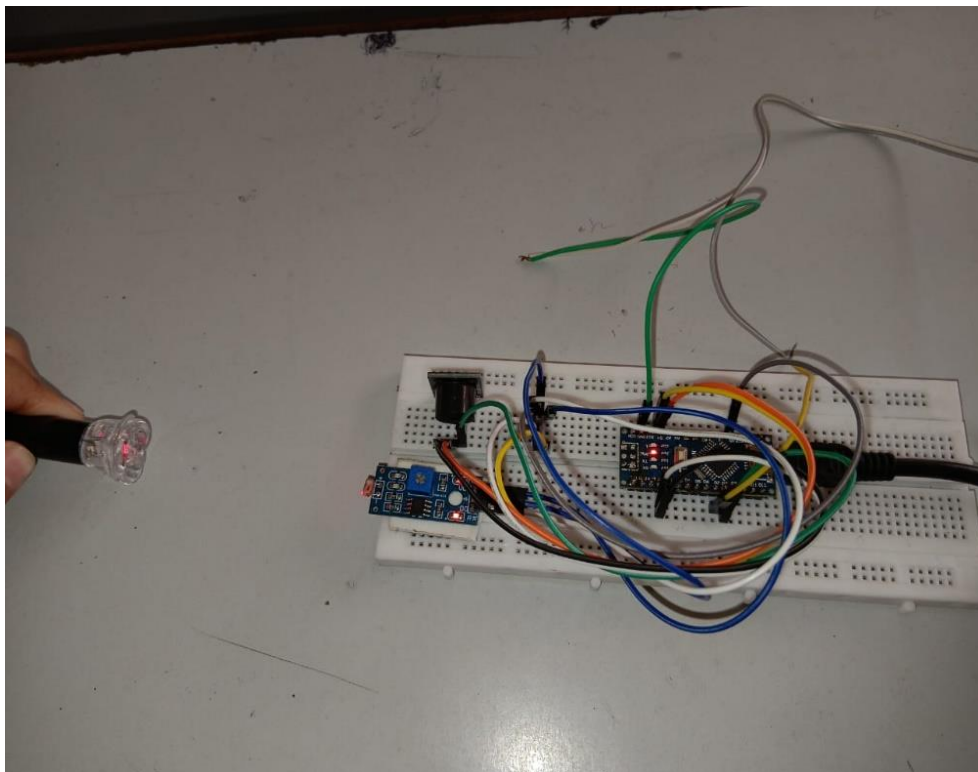
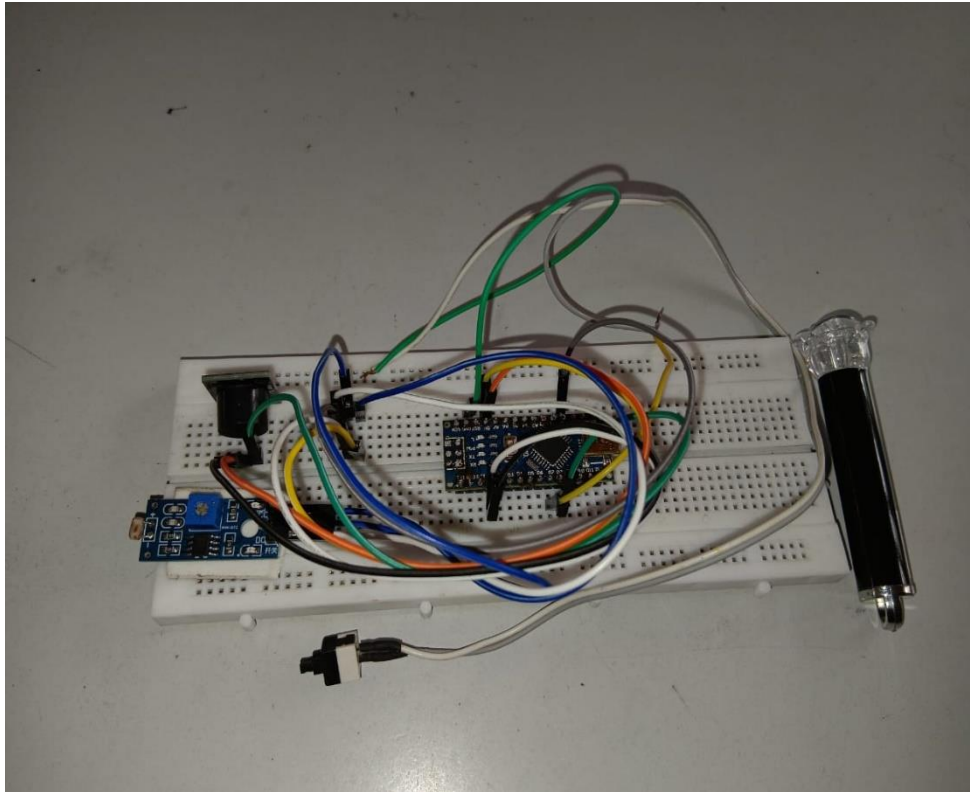


SOFTWARE USED

1.ARDUINO IDE: The Arduino IDE (Integrated Development Environment) is used to write the computer code and upload this code to the physical board. The Arduino IDE is very simple and this simplicity is probably one of the main reason Arduino became so popular. An integrated development environment (IDE) is a software application that helps programmers develop software code efficiently. It increases developer productivity by combining capabilities such as software editing, building, testing, and packaging in an easy-to-use application.



VII. RESULTS



APPLICATIONS

1. Intrusion Detection:- Laser beams are set up as a barrier in entry points (like doors and windows) or across open spaces. If the beam is interrupted, it triggers an alarm, indicating that someone has entered the area.
2. Perimeter Security:- These systems can secure large outdoor areas such as perimeters of buildings, warehouses, or private properties. Laser beams can be positioned at various heights to detect intruders effectively.
3. Area Monitoring:- Laser alarms can monitor specific zones, such as high-value asset areas in a warehouse or server rooms, providing alerts if someone enters these restricted spaces.
4. Cost-Effectiveness:- Compared to traditional security systems, laser alarms can be more cost effective in certain applications, especially when covering large areas that would require multiple motion detectors.

VIII. CONCLUSION

- By this project we conclude that the traditional door locks will not be able to provide a high security, so that now-a-days we started using laser security system, It is manually switch dependent sensors and a basic alarm unit. Laser security system a person moves in front of the motion sensor, that person's body heat triggers the system's alarm. And the alarm signals the security monitoring company and local law enforcement.
- In the view of the future scope of laser applications, lasers will be key a contributor in many advanced fields including sensors, digitization, artificial intelligence to data encryption in quantum technology. The system can be built using a GSM module that will send a notification to the owner regarding the person who is trying to enter the place through the door. Just in case the notification goes unnoticed then an additional feature that calls the owner is also added just to make the system more secure and more reliable and to ensure that the invader is brought to the notice of the owner . In addition to all this this turning turning off and on of the system can also be controlled with the help of a code. Certain words can be used as passwords to turn on and off the system.

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