A

Technical Report

on

LASER SHARP SECURITY

Submitted to CMR Institute of Technology in the partial fulfillment of the requirement of

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CSE DEPARTMENT

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Certificate

This is to certify that the technical report entitled "***LASER SHARP SECURITY***" is the bonafide work done and submitted by

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Towards the partial fulfillment of the requirement of Social Innovation (SIL) Laboratory of **II B. Tech I-Semester** in **CSE-D** is a record of bonafide work carried out by them during the period **March 2023 to July 2023.**

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EXTERNAL EXAMINER

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1. INTRODUCTION

The Laser Sharp Security System is an advanced security system that utilizes laser technology for precise and highly effective protection. This cutting-edge system incorporates lasers as a primary component to enhance the security measures in various environments, such as residential properties, commercial buildings,and sensitive facilities.

The Laser Sharp Security System employs a network of strategically positioned laser beams to create a virtual barrier or detection zone. These laser beams are emitted at specific wavelengths and carefully calibrated to ensure accuracy and reliability. When any object or person interrupts the laser beams,the system triggers an alarm or activates countermeasures to prevent unauthorized access or potential threats.

The Laser Sharp Security System is an advanced and sophisticated security solution that utilizes laser technology to provide enhanced protection for various applications, such as high-security facilities, sensitive areas, or valuable assets. This system offers a higher level of security by detecting, monitoring, and alerting against unauthorized access or intrusion attempts.

2. EMPATHIZE

We understand that security is a crucial concern for individuals, organizations, and communities. The need for effective and reliable security systems is vital to protect people, assets, and sensitive areas from potential threats and intrusions. In today's world, where security risks are evolving and becoming more sophisticated, it's essential to have advanced solutions that can provide a high level of protection.

The Laser Sharp Security System aims to address these concerns by leveraging laser technology to create a robust and intelligent security framework. By using laser beams strategically placed throughout the area, it forms an invisible web of protection that can detect even the slightest disturbances. This multi-layered approach ensures that unauthorized access or intrusion attempts are promptly identified and reported.

The system's intelligent monitoring capabilities further enhance its effectiveness. **By analyzing the laser beam patterns, the system can differentiate between harmless disturbances and potential security threats posed by human intrusion.** This helps reduce false alarms and ensures that security personnel or authorities are alerted only when a genuine threat is detected.

Moreover, the Laser Sharp Security System can be customized to fit specific security requirements, providing flexibility for different environments. It can seamlessly integrate with other security systems, enhancing the overall security infrastructure and enabling a more comprehensive approach to security management.

3. DEFINE

Problem Statement:

LACK OF RAPID SECURITY MEASURES AT
LOCKER,BANK,JEWELLERY SHOPS AND MALLS

The existing security systems face limitations in effectively detecting and preventing unauthorized access or intrusion attempts, resulting in potential security vulnerabilities. These limitations include inadequatecoverage, high false alarm rates, and difficulties in distinguishing between genuine threats and harmless disturbances. Therefore, there is a need for an advanced security solution that overcomes these challenges and provides comprehensive and reliable protection for various applications and environments.

4. IDEATE

The Laser Sharp Security System operates through a well-defined process that involves various stages. Here is an overview of the typical process involved in the functioning of the system:

1.System Design: The first step in implementing the Laser Sharp Security System is to design the system layout based on the specific security requirements of the area or facility to be protected. This involves identifying the key areas to be covered, determining the placement of laser beams, and configuring the system for optimal coverage.

2.**Laser Beam Installation:** Once the system design is finalized, the laser beams are installed at strategic locations throughout the secured area. These beams create an invisible network of protection, forming the primary line of defense against unauthorized access or intrusion.

3.Calibration and Alignment: After the installation, the laser beams are calibrated and aligned to ensure accurate detection and minimize false alarms. This process involves precisely adjusting the beam paths,angles, and sensitivity levels to achieve optimal performance.

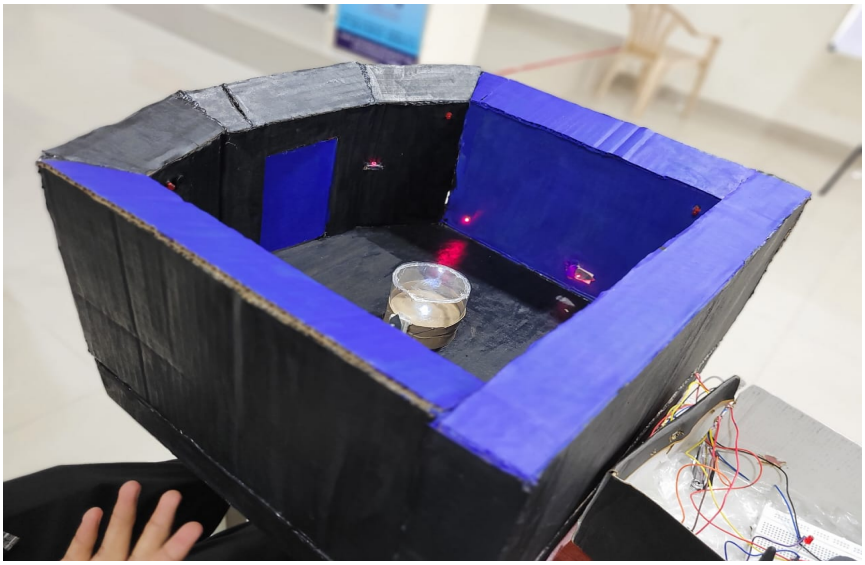
4.Intelligent Monitoring Configuration: The Laser Sharp Security System is equipped with intelligent monitoring capabilities that analyze the laser beam patterns to detect any disturbances or interruptions. During this stage, the system's algorithms and settings are configured to differentiate between harmless disturbances and potential security threats.

5.Alert and Notification Setup: In the event of an unauthorized breach or intrusion attempt, the system triggers an instant alert. The specific alert mechanisms and notifications are configured based on the requirements of the security setup. This may include activating alarms, sirens, or sending notifications to a security control center or designated personnel.

6.Integration with Other Systems: The Laser Sharp Security System can be integrated with other security systems, such as CCTV cameras, access control systems, or perimeter fences. Integration allows for a comprehensive security infrastructure, enabling a more coordinated and effective response to security incidents.

Throughout the process, it is important to collaborate with security experts, system integrators, and relevant stakeholders to ensure that the Laser Sharp Security System is tailored to meet the specific security needs and compliance requirements of the protected area or facility.

5. PROTYPE



6. TEST

1. Testing and Fine-tuning: Once the system is set up and configured, thorough testing is conducted to ensure its functionality and reliability. This involves simulating various scenarios and assessing the system's response and accuracy. Any necessary fine-tuning or adjustments are made during this stage to optimize performance.

2. Ongoing Maintenance and Monitoring: The Laser Sharp Security System requires regular maintenance to ensure its continued operationand effectiveness. This includes periodic inspections, cleaning of lasercomponents, and monitoring system logs and performance metrics. Any issues or anomalies detected are addressed promptly to maintain the system's reliability.

3. Here are the pin configurations for the Arduino Uno:

- Laser module:
  - Connect the positive (+) terminal of the laser module to digital pin 2.
  - Connect the negative (-) terminal of the laser module to GND (ground) pin on the Arduino.

- LDR:
  - Connect one leg of the LDR to the 5V pin on the Arduino.
  - Connect the other leg of the LDR to the analog pin A0 on the Arduino.
  - Connect a 10kΩ resistor from the same leg of the LDR to the GND (ground) pin on the Arduino.

- Buzzer:
  - Connect the positive (+) terminal of the buzzer to digital pin 3.
  - Connect the negative (-) terminal of the buzzer to the GND (ground) pin on the Arduino.

⇨ Here's a sample Arduino Uno code for the Laser Sharp Security project:

```
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27, 16, 2);
#include <SoftwareSerial.h>
SoftwareSerial mySerial(9, 10);

int buzzer = 13;
int lightA0 = A0;
int frequency;
int call;

void setup() {
 lcd.init();              // initialize the lcd
 lcd.backlight();
 mySerial.begin(9600);

 Serial.begin(9600);
 pinMode(buzzer, OUTPUT);
/* lcd.setCursor(3, 0);
 lcd.print("Welcome to");
 lcd.setCursor(1, 1);
 lcd.print("Infinite Xpro");
 delay(1000);*/
}

void loop() {
```

```
int analogSensor = analogRead(lightA0);
frequency = (analogSensor - 10) / 10;

/*lcd.setCursor(0, 0);
lcd.print(" Alert Level:");
lcd.setCursor(10, 0);
lcd.print(frequency);
lcd.setCursor(12, 0);
lcd.print("%");*/

// Checks if it has reached the threshold value
if ( frequency >= 50) {
  initializeGSM();
  SendTextMessage();


  lcd.setCursor(0, 1);
  lcd.print("DANGER");
  tone(buzzer, 1000, 2000);//(X=?,Y=GLOW TIME)
} else {
  lcd.setCursor(0, 1);
  lcd.print("NORMAL");
  noTone(buzzer);
}
delay(500);
```

```
 lcd.clear();
}

void SendTextMessage() {
 mySerial.println("AT+CMGF=1");                // To send SMS in Text Mode
 delay(1000);
 mySerial.println("AT+CMGS=\"+917997503142\"\r"); // Change to the phone number you are using
 delay(1000);
 mySerial.println("NEW ALLERT!");             // The content of the message

 delay(1000);
 mySerial.println((char)26);                  // The stopping character
 delay(1000);                                 // Increase the delay to ensure successful SMS sending
}
void makePhoneCall() {
 mySerial.println("ATD7997503142;");  // Replace with the phone number you want to call
 delay(1000);  // Wait for 10 seconds or adjust as needed
 mySerial.println("ATH");  // Hang up the call
}
void initializeGSM() {
 mySerial.println("AT");
 delay(1000);

 mySerial.println("AT+CMGF=1");
 delay(1000);
```

```
  mySerial.println("AT+CNMI=2,2,0,0,0");
  delay(1000);
}
```

REFERENCES

ARDUINO UNO CODE FROM GEEK FOR GREEKS
https://www.geeksforgeeks.org/

TUTORIALSPOINT
https://www.tutorialspoint.com/index.htm

CIRCUIT CONNECTION DATA FROM "CHATGPT"
https://openai.com/blog/chatgpt