



Laser-Based Rodent Detection System for Enhanced Rat Control

Presented by:
Ishti Chaudhary,
Saket Dwaraka Bhamidipaati,
Saptarshi Mahapatra,
Mudunuri Rahul Varma,
Diwas Upadhyay

Agenda

Abstract

Introduction

Background

System Design:

Implementation

Benefits and Challenges:

Future Directions:

Conclusion:

References::

Tip: Use links to go to a different page inside your presentation.

How: Highlight text, click on the link symbol on the toolbar, and select the page in your presentation you want to connect.

ABSTRACT

Rodents are significant public health and sanitation concerns.

Traditional rodent-catching methods often prove inefficient and labor-intensive.

laser technology presents an innovative solution.

By utilizing lasers in conjunction with sensors, the system detects rat presence in targeted areas, enabling prompt and effective rat control measures.

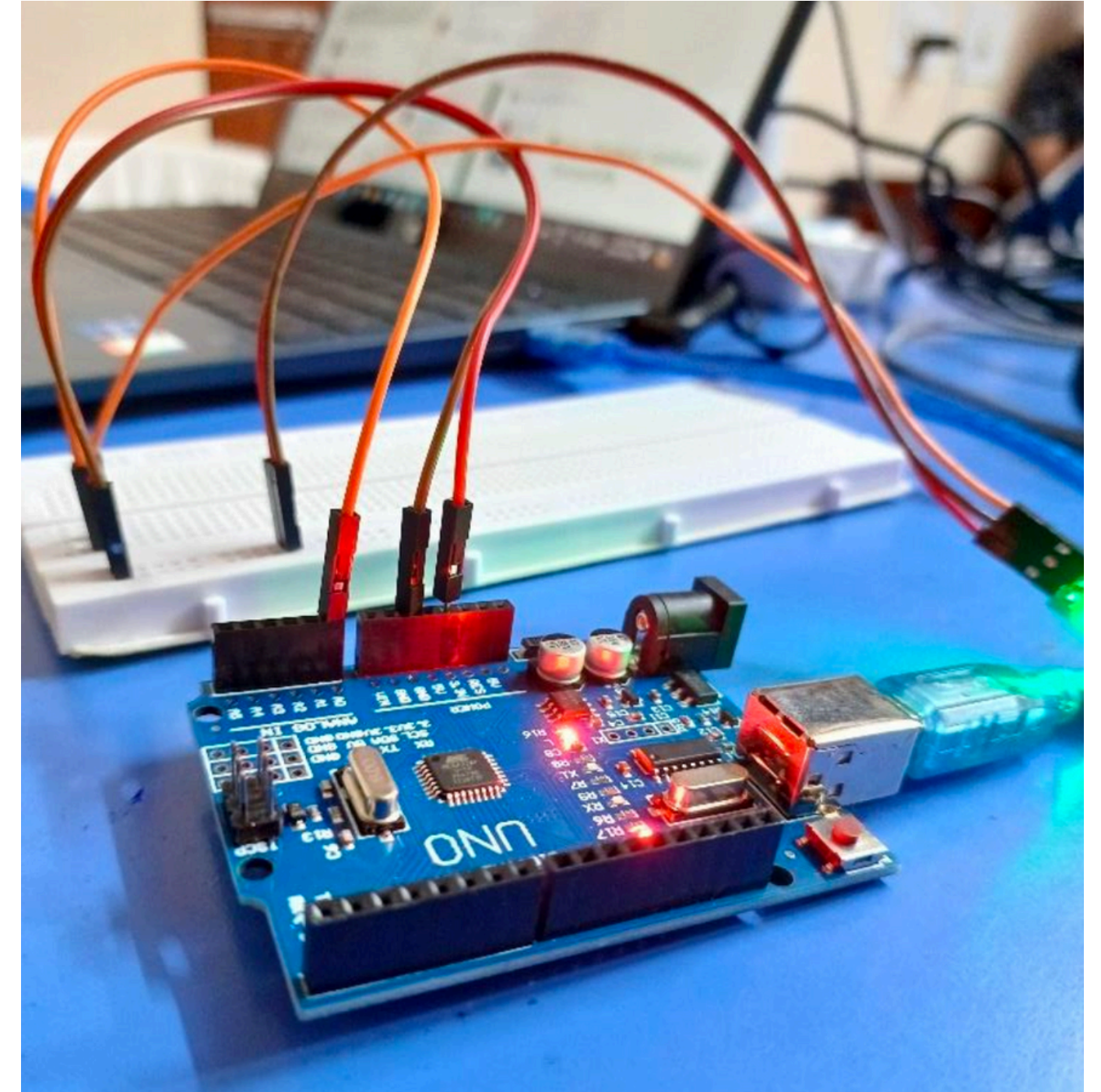


Introduction

- Rodents cause property damage and spread diseases.
- Current rat control methods have limitations.
- Laser-based detection offers a novel and promising approach to address these challenges.

Background

- Laser technology is widely used across various industries.
- In this project, lasers are employed to detect rodent presence.
- When a rodent interrupts the laser beam, it triggers sensors that alert the system to the presence of the rodent.



System Design

[Back to Agenda](#)

The rat detection system consists of laser emitters and receivers strategically placed in areas prone to rat activity.



The lasers create a grid or barrier, and when a rat crosses the path of the laser beam, it disrupts the beam, activating the sensors.



The system's microcontroller processes the sensor data and generates alerts indicating rat presence.

Implementation

Laser emitters and receivers are connected to a microcontroller, such as Arduino or Raspberry Pi, which controls the operation of the system.

When a disruption in the laser beam is detected, the microcontroller triggers an alert mechanism, which may include visual indicators, audible alarms, or notifications sent to a central monitoring system.

Benefits and Challenges:



Advantages:

- High accuracy in detection
- rapid response time
- minimal environmental impact.



Challenges:

- Calibration of sensors,
- Alignment of laser emitters and receivers.
- Interference from ambient light need to be addressed for optimal functionality.

Future Directions:

- Research efforts could focus on enhancing sensitivity and robustness through advanced laser technology and signal processing algorithms.
- Integration with remote monitoring systems and automated rat-catching mechanisms could further enhance the effectiveness of rat control efforts



Laser-based rat detection system presents a promising solution to improve rat control measures

Conclusion

Real-time detection enables proactive management strategies, reducing reliance on manual inspections.

Continued development and refinement hold the potential to revolutionize rat control efforts in urban and rural environments.

References:

- [1] Lee, S. et al. (2018). Laser-based Rat Detection System: Design and Implementation. Journal of Pest Control Engineering, 20(2), 67-78.
- [2] Chen, H. et al. (2021). Advances in Laser Technology for Pest Detection and Control. Proceedings of the International Conference on Pest Management, 245-256.