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COMPUTER STUDIES DEPARTMENT

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY



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ARDUINO-BASED MISSILE DEFENSE SYSTEM

Description:

The Arduino-Based Missile Defense System is a cutting-edge DIY project designed to simulate a missile defense radar system. Using an Arduino Uno, ultrasonic sensor, and a USB missile launcher, this system provides a hands-on approach to learning about radar detection, motion sensing, and automated defense mechanisms. With the optional inclusion of a Raspberry Pi and screen, users can visualize radar data in real-time, enhancing their understanding of radar operations and automation in defense technologies.

Objectives:

- To design and implement a missile defense system using Arduino and sensors.
- To integrate the ultrasonic sensor for detecting incoming projectiles.
- To control a servo to position the missile launcher based on radar detection.
- To create a user interface (UI) on a Raspberry Pi for visualizing radar data.
- To simulate a missile defense scenario by automating missile launch responses.

Scope:

- The system will include a functioning radar detection mechanism based on ultrasonic sensors.
- It will feature an automated missile defense response by controlling a USB missile launcher.
- The radar system will be designed to detect and track objects within a specified range.
- A simple Raspberry Pi interface will be provided to display the detection data.
- The project will aim to be an educational tool for learning about radar technology and automation.

Limitation:

- The ultrasonic sensor's range is limited to approximately 4 meters.
- The missile defense system will only respond to objects within the sensor's detection area.
- The system will not handle multiple objects or complex real-world missile threats.
- The Raspberry Pi screen and interface are optional and may not be included in all builds.
- The automated missile launcher will have limited targeting precision due to hardware constraints.

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