

INVISIBLE FENCE SECURITY SYSTEM

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BACKGROUND

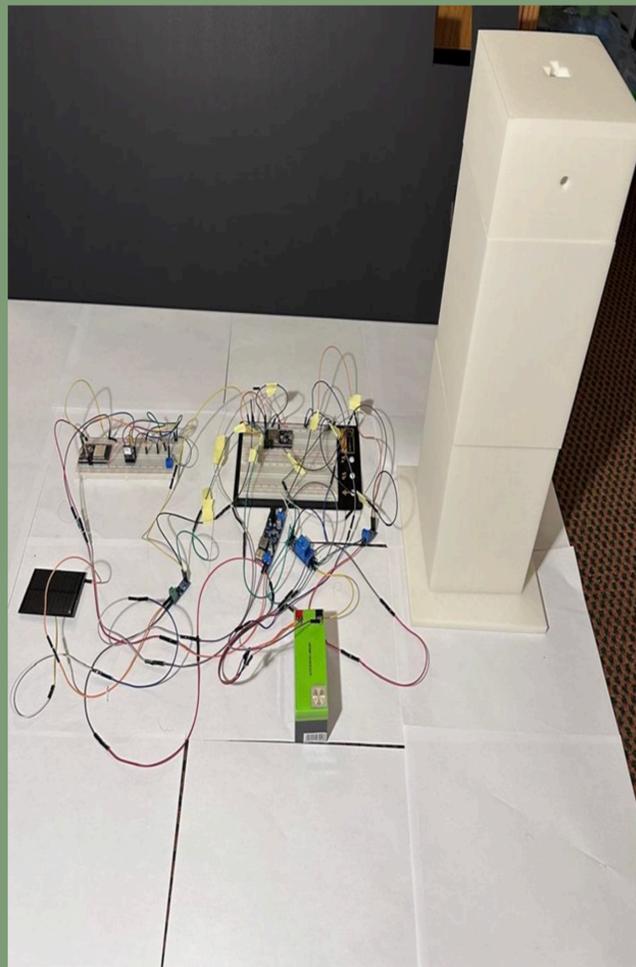
THE DEVELOPMENT OF THE INVISIBLE FENCE SYSTEM WAS INSPIRED BY THE URGENT NEED FOR ENHANCED SECURITY MEASURES IN DIVERSE SETTINGS. THIS INSIGHT EMERGED FROM DETAILED EVALUATIONS VIA THE INDUSTRIAL INTERVIEW FORM AND EXTENSIVE RESEARCH, HIGHLIGHTING THE NECESSITY FOR A MORE EFFECTIVE PERIMETER SECURITY SOLUTION. OUR PROJECT INCORPORATES A STATE-OF-THE-ART MICROWAVE MOTION SENSOR CAPABLE OF DETECTING INTRUSIONS WITHIN A 32-METER RANGE. ADDITIONALLY, IT IS EQUIPPED WITH A THERMAL CAMERA TO IMPROVE IDENTIFICATION ACCURACY. THE SYSTEM'S POLES ARE DESIGNED TO BE ECO-FRIENDLY AND FACILITATE STRAIGHTFORWARD INSTALLATION, ALIGNING WITH MODERN ENVIRONMENTAL AND OPERATIONAL STANDARDS.

PROBLEM STATEMENT

ENSURING EFFECTIVE SECURITY AT CERTAIN LOCATIONS, ESPECIALLY IN REMOTE AREAS, POSES CHALLENGES DUE TO THE LIMITATIONS OF TRADITIONAL PHYSICAL BARRIERS AND THE DIFFICULTY IN EFFICIENT MONITORING.

THERE IS A CRUCIAL NEED FOR AN ADVANCED AND DISCREET SECURITY SOLUTION TO ENHANCE PERIMETER CONTROL, DETECT UNAUTHORIZED ENTRY, AND ADDRESS THE UNIQUE CHALLENGES OF PROTECTING REMOTE ENVIRONMENTS WHILE MAINTAINING VISUAL AESTHETICS.

PROTOTYPE



CONSTRAINTS

- SIGNAL INTERFERENCE
- RANGE OF DETECTION 32M
- NATURAL TERRAIN
- HARDWARE CAPACITY

PROJECT IMPACT

The integration of microwave motion sensors and thermal cameras allows for accurate detection and identification of intrusions, significantly reducing the risk of unauthorized access. This technology ensures a reliable security perimeter around sensitive areas, enhancing overall safety.

Final Target Specification

Detection	Using 10.5GHz sensor detect up to 32m
Power Efficiency	Continues power supply with solar panel
Accurate	32x24 pixels thermal camera
Sustainable	Easy to install & works up to 85C
Fast Communication (delay)	Using Lora with <5ms

Invisible Fence

Home

Poles summary

Logs



Battery level: 55%
Temperature: 36 degrees
IP Address: 192.168.100.2



Battery level: 35%
Temperature: 20 degrees
IP Address: 192.168.100.3



Battery level: 7%
Temperature: 30 degrees
IP Address: 192.168.100.4

Test Connectivity

Test if the software is connected to the poles

Test

CONCLUSION

THE INVISIBLE FENCE SYSTEM STANDS AS A SIGNIFICANT INNOVATION IN SECURITY TECHNOLOGY, MERGING ADVANCED MICROWAVE MOTION SENSORS AND THERMAL CAMERAS FOR PRECISE INTRUSION DETECTION. THE SYSTEM IS ECO-FRIENDLY AND EASY TO INSTALL, WITH A SUSTAINABLE POWER SUPPLY FROM SOLAR PANELS ENSURING CONTINUOUS OPERATION. THIS RELIABLE, COST-EFFECTIVE SOLUTION MEETS DIVERSE SECURITY NEEDS WHILE SUPPORTING GLOBAL SUSTAINABILITY GOALS, SETTING NEW STANDARDS IN SECURITY INFRASTRUCTURE.