Title: AI-Based Human Detection System with Thermal, HOG, and Drone Integration

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- AI-Based Human Detection System with Thermal, HOG, and Drone Integration

Introduction

- Our project is to use a human detection system for the disaster situations using in drones.

- It Can be useful for the help of human who stuck in place where rescue team and special force can’t go.

Objective

- Clearly state the objective of the presentation: To introduce an AI-based human detection system using Thermal, HOG technology, and drone integration.

System Overview

- Provide an overview of the AI-based human detection system.

- Mention the key components, including thermal sensors, HOG (Histogram of Oriented Gradients) for clear view detection, and drones for aerial surveillance.

Thermal Detection

- Explain the concept of thermal detection.

- Describe how thermal sensors work to detect human body heat signatures.

- Highlight the advantages of thermal detection, such as working in low-light conditions and detecting concealed individuals.

HOG Technology

- Introduce Histogram of Oriented Gradients (HOG) technology.

- Explain how HOG extracts feature descriptors from images.

- Emphasize its role in providing a clear view detection of human shapes and patterns.

Drone Integration

- Explain the integration of drones into the human detection system.

- Discuss the benefits of using drones for aerial surveillance in real-time human detection.

System Architecture

- Present an architectural diagram of the AI-based human detection system with drone integration.

AI Model

- The machine learning or deep learning model used for human detection.

- Mention the algorithms and frameworks employed for both ground and aerial detection.

Real-time Detection

- The system performs real-time human detection using thermal, HOG, and drone integration.

Applications

- Security and surveillance in large areas

- Disaster response and search and rescue missions

- Border and perimeter monitoring

- Wildlife conservation and monitoring

Advantages

- Effective in various lighting conditions

- Accurate detection even in challenging scenarios

- Enhanced situational awareness through aerial surveillance

Development till now:

* Human identification using optical sensor with face and eyes detection has been completed.
* Drone body has been made(not in working condition).

Things need to be done:

* Thermal camera and radar sensors are yet to be implemented(due to unavailability of sensors in the local market)
* Bugs reducing the accuracy are yet to be removed.

Future Improvements

- Autonomous drone navigation for optimized coverage

- Integration with other sensor modalities (e.g., LiDAR)

- Advanced AI algorithms for behavior analysis

