Spydersense: A Thermal Monitoring Hexapod Robot

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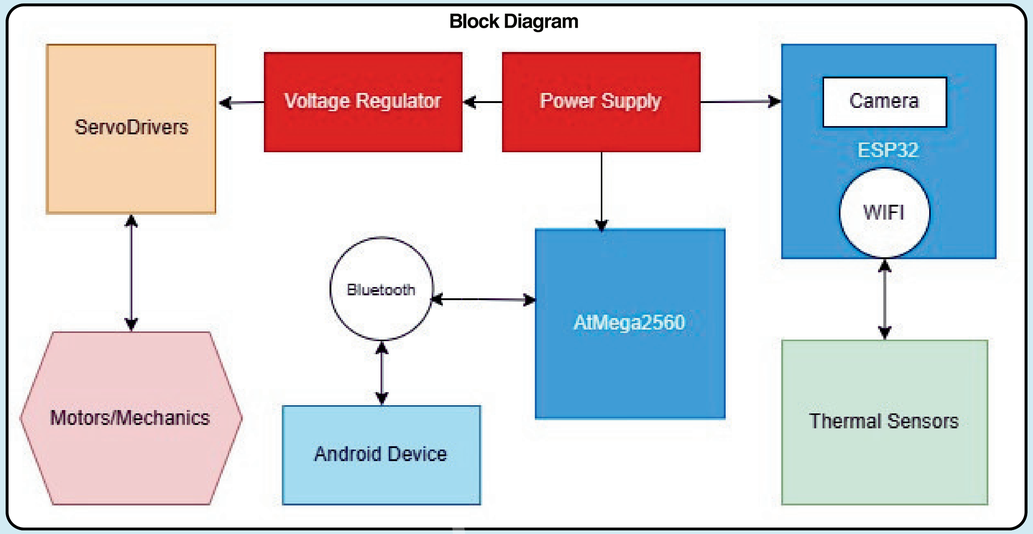
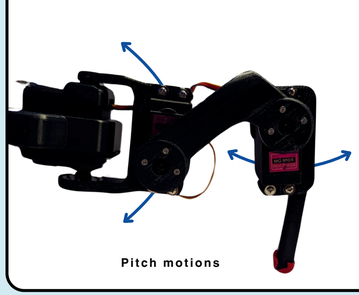
(1) Objectives

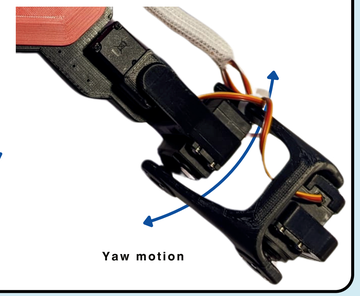
- Firefighters face difficulties in old abandoned buildings.
- Buildings may collapse at any time, endangering human lives.
- Control of fires, resource allocation, and rescue operations are challenging.
- Our project aims to provide a robotic solution for efficient resource allocation and rescue efforts.



(4) Movement

- Hexapod robots move with 3 Degrees Of Freedom, allowing versatile pitch and yaw motions.



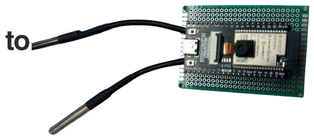


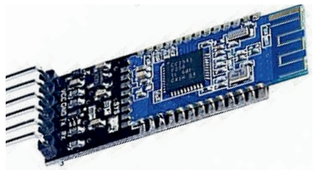
(2) Design Parameters

- Bluetooth connectivity with a range of at least 50 meters.
- Battery life of at least 30 minutes on a single charge.
- Integration of a navigational camera.
- Inclusion of a thermal sensor for environmental monitoring.
- Integration of user interface capabilities for interaction and control.

(3) Technical Specifications

- Temperatures range from -55°C to +125°C (Accuracy+/-0.5 ºC)
- Camera OV2640 2 Megapixel, Frame rate UXGA(1600*1200) @15FPS
- Range (100m in open Space)





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(5) Results

- Bluetooth Remote Control: Control the robot wirelessly from a distance via Bluetooth.
- WiFi Camera Streaming: Stream live camera footage over WiFi for real-time visual monitoring and surveillance capabilities.
- Temperature Reading: Obtain accurate temperature readings providing crucial environmental data for informed decision-making.

(6) Future Work

- Integrate IMU and upgrade microprocessor to enhance performance.
- Add face recognition system for disaster victim identification.
- Implement motion planning and path planning algorithms.
- Add Lidar to enable autonomous functionality.

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