

## Compliant Search and Rescue Rover

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### **Abstract**

In emergency and disaster response scenarios, carrying out direct search operations becomes highly challenging due to debris, unstable structures, and risks to human life. To overcome these limitations, this work focuses on the development of a compact remotely operated search and rescue rover with real time visual monitoring capability. Based on the operational requirements of hazardous environment exploration, the wireless control system, motion performance, and live video transmission of the rover are designed and evaluated. A WiFi based remote navigation framework combined with an onboard camera system is implemented to provide continuous visual feedback for effective maneuvering. Experimental testing is conducted in both indoor and outdoor conditions to examine the operational reliability of the platform. The results demonstrate that the developed rover delivers consistent real time video streaming and responsive motion control, and serves as a promising foundation for advanced rescue robotics and future enhancement with obstacle traversal and autonomous features.

### **Keywords**

Search and Rescue Rover, Remote Surveillance, Wireless Robot Control, Disaster Response Robotics.