Project Title:	UAV for Fire Spotting and Prevention
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Develop a modular unmanned aerial vehicle (UAV) designed to aid in wildfire spotting and prevention by supplementing traditional fire watch towers and aerial surveillance. The UAV will be capable of 60 minutes of endurance while carrying a payload. By providing firefighters and forestry agencies with a cost-effective, adaptable platform, the system will enhance early fire detection and response capabilities.

The UAV will meet key performance requirements, including at least one hour of flight time, range of 5 miles from the operator, and maneuverability in mountainous terrain with a climb speed of 200 ft/s. The maximum gross weight will be limited to 15 lbs, with allowance for a 2.2 lb payload to accommodate common thermal imaging systems. It will maintain a cruising speed of at least 30 mph and incorporate a return-to-home function in the event of signal loss.

The design will emphasize modularity and repairability, incorporating commercially available electrical components and payload mounting options. Structural components will be lightweight and easily modifiable, with 3D-printed parts encouraged to simplify repairs and adjustments. The UAV must also comply with FAA Part 107 regulations, including weight, altitude, and operational restrictions while being easily stored and transported in a standard 6-foot truck bed.

The project budget is limited to $1,000, with development and testing to be completed within two academic semesters.