SkyHound: A Low-Cost 3D Printed Autonomous WiFi Tracking Search Drone to Locate Missing Victims of Natural Disasters

Jain, Pooja (School: West Linn High School)
Jain, Neel (School: West Linn High School)

In 2018, Indonesia was hit with one of the deadliest earthquakes in its history, measured at a magnitude of 7.5. More than 1,000 died and as many as 5,000 remain missing. Current victim tracking technology focuses on biosignatures, such breath/heartbeat patterns or brute force search and rescue, but remain inaccessible to civilians due to high-costs and involving specialized, bulky, technology. With the growing desperation to find victims alive, there's a demand for emergency rescuers to efficiently obtain information on victims as soon as possible. Studies by Pew Research published in 2018 indicate that 77% of the US population own smartphones and 94% of them frequently carry it with them, with 82% of them rarely turning them off. With these statistics, we believe the most efficient way to find victims is through the tracking of civilian smartphones with a mobile system. The solution is SkyHound: a search and rescue 3D printed drone equipped with a Raspberry Pi, WiFi-Tracker and GPS to locate smartphones and their owners. This project locates victims by scanning an area for WiFi probing requests and then stores essential, identifying information about the smartphones into a master list on an external USB. Afterward, the list is uploaded to Google Earth, producing a map plotted with exact locations of devices, and with them, survivors. The 3D printed drone, designed with cost-effective materials for easy part replacement, is optimized with the proper weight specifications to efficiently bear the weight of the technology. This meshes together to create a portable, cost-effective, easy to operate, search-and-rescue system that can maximize the number of lives found in a period of time allowing search and rescue authorities to pinpoint survivors as soon as possible.

Awards Won:
Fourth Award of $500
U.S. Agency for International Development: USAID Science for Development Third Place Award of $2,000.
K. Soumyanath Memorial Award: First Award of $3,000