Using Virtual Reality to Control a Swarm of Drones

The purpose of this research project is to implement a virtual reality controller designed to interface with a swarm of search and rescue drones. The goal is to see if virtual reality can be used to improve the interface between a human controller and a drone swarm. The project will have three main parts. The first part focuses on using Virtual Reality to present the information acquired by the swarm in the clearest and most concise way possible. The second part deals with increasing user control of the swarm. The final part focuses on increasing user control over each individual drone.

Presenting information in a concise way will primarily revolve around the video input. The project will aim to synthesize the video input and display only the most important of information. Image recognition algorithms will be used to determine which video feeds are out of the ordinary in comparison with the other feeds. These feeds will then be shown to the user.

Increasing user control of the swarm will allow the user to use basic hand gestures and other simple motions to give commands to the swarm. The user will be able to command the swarm to advance, confirm the rescue target as well as return to base.

Finally, the user will be given individual control over each drone. This will include telling the drone to advance, explore an area, or return to base. In addition, the user will be able to take direct control of that drone and fly it themselves.