Quad-rotor UAV’s provide a stable and flexible platform to perform reconnaissance. The primary limiting factors of their effectiveness are battery life and range. In urban environments, large buildings limit the line of sight of transmitters, making traditional remote control techniques relatively ineffective. We aim to take advantage of the population density of urban environments by using WiFi as the primary means of communication for the quadcopter.

We will install a WiFi module onboard the quadcopter and program it to automatically connect to the available network with the best signal. As it flies out of range of one network it will begin to look for others to connect to. It will use the WiFi connection to communicate with a web server that will be used as its controller. The user will send commands to the quadcopter via the server and will receive telemetry from the UAV on the same system. The use of WiFi allows for high bandwidth applications, as well. So, a video feed and audio data could also be sent to the server.

We must be careful to take into consideration the energy consumption of a WiFi connection and need to calculate the power usage of the module. For WiFi-enabled control to be useful, it must be able to reach a reasonable range before the battery level becomes low.