Overview of Yodel Mesh Networking Project (Yodel)
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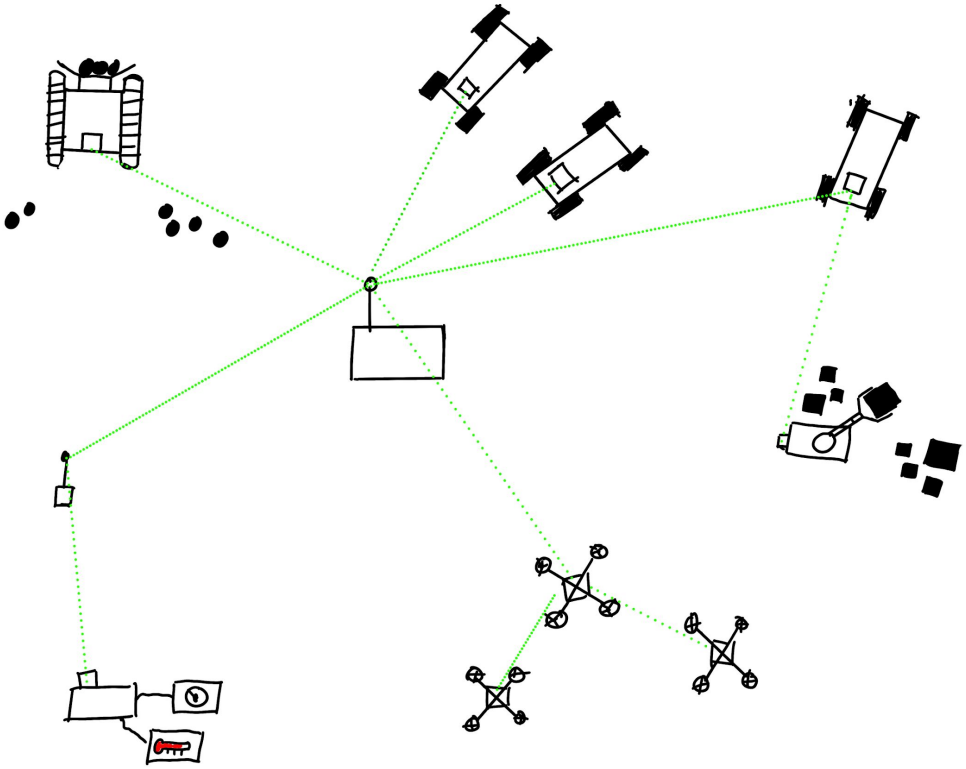

Code & Documentation:
[Yodel repository]

Overview:

The goal of Yodel is to create a system through which robots can be easily remote controlled by a computer without specialized hardware such as RC specific external antennas. Yodel is able to take advantage of the fully functioning radios already built into modern computers for handling WIFI and Bluetooth. Yodel repurposes these built in radios to communicate with robots.

Technical overview

Despite using the WIFI hardware, Yodel does not use WIFI, rather, Yodel interacts directly with the systems one layer below WIFI. I decided to implement it this way because it has a couple of benefits as well as some drawbacks as compared to a purely WIFI based system that say an internet printer would use. The main benefits are that devices using yodel do not need to be connected to any sort of hotspot, also, by using these lower level systems yodel is able to gain far greater control, for example, yodel is able to directly manipulate the broadcast frequency and broadcast power. This low level control as well as some sacrifices to bandwidth also allows for both Yodel to have a range around 2-3x that of WIFI, and for mesh networking between robots to be implemented.

Why I created this project and where I want to go with it

I created Yodel as part of an internship with the company Pi-top. Pi-top is a company that makes peripherals, sensors and other products that make Raspberry-pi computers more viable in a classroom environment. As part of this internship they asked me to essentially “do something cool” with their product, since wireless protocols and remote control have both been areas i have been meaning to explore, I figured that creating a fully functioning system for remote controlling pi-tops and their associated peripherals would both be something cool and would be a fantastic excuse to dive into the fundamentals of wireless communication. As of now I have worked on Yodel for about 3 months and it’s for the most part done. If you are interested in checking it out, I recently published Yodel to the Python Package Index (pypi) under an MIT open sources license and it can be found here.