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# Goals

Waveform reconstruction continued, test hardware, and focus on the simulation aspect in particular

# Problem

Part of the simulation is to simulate the RF signal and the AOA calculation. Therefore, it’s important to simulate the hardware of the system. The entire simulation process will generate RF sine waves, down converts them to IF, quantizes the signals to simulate the ADC stage, and then uses the DF algorithm to calculate the AOA. Last week, I received a SDR-RTL and was able to install the Hardware Support Package with Matlab and tried some of the provided examples. I also focused on testing the code I wrote from the week before. Since MEng poster session is coming up, I also worked on that.

# General approach

The signal generation code I have right now just sets frequency as an user input parameter so that once we’ve decided on a frequency value, I can easily set it. I also add a plotting function to it so that the signal generated can be visualized. Matlab provides a very detailed explanation and tootlbox on implementing a Digital Down Converter. For the quantizer, I have used a partition length of 12 intervals since it is a 12-bit quantizer that I will be using. We were also able to submit a first draft of the poster on Blackboard.

The group planned to work on the cross-correlation but Russell said the pigtail cable hasn’t arrived yet and we will work together once it’s here.

# Planned Course of Action

# Write the DF algorithm including signal detection, frequency calculation, phase calculation and AOA calculation.

# Continue to edit and finalize the MEng poster and prepare for the presentation next week

# Resources and relevant Forum Posts

# Matlab Simulation Model: <https://pdfs.semanticscholar.org/66f7/d0d7e1bed27acc37b5721f4abe649f9a053e.pdf>

# RTL-SDR Support Package Hardware Setup: <http://www.mathworks.com/help/supportpkg/rtlsdrradio/ug/support-package-hardware-setup.html#bunsvm7-34>