Week 2 Report

Project title:

What is MIMO?

What is a ping pong buffer?

What is an EVM? An EVM stands for evaluation module

Talk about data layer/s. The [Easy evaluation and development of mmWave systems with software development kit](https://www.ti.com/lit/pdf/SLYP721) found under the technical documentation of the mmWave SDK has a nice slide that shows the data path of the radar module (figure 1).Graphical user interface, diagram

Description automatically generated

Figure

This shows the board seems to have a few different layers of data access with the xWR64xx series of radars producing ADC Data and Point Cloud Data and the xWR68xx also being able to produce object data that can be requested from the module.

How to setup the radar module.

Talk about serial data being a good place to interface directly with the board to harvest the data. Video 3.1 of the mmWave training series on the TI website shows the mmWave demo visualiser which gives hints on where to start with replacing the mmWave studio. The first thing is that we need to select 2 COM ports from further reading it appears that in this demonstration one serial port is responsible for sending commands and one is responsible for sending commands to the Radar and the other is responsible for sending data back to the computer. On the mmWave demo visualiser there is a console messages box that when “send config to mmWave device” is clicked appears to show a load of commands being sent. As a result, I believe one of my first tasks when I have a device to experiment with is to see if I can send commands directly over the com port to get a response from the board. I also need to try find a list of the commands that can be sent over serial if this is a valid communication approach.

Talk about uses of the radar module. Just describe the uses e.g. medical tracking cars and that etc. There are many uses of mmWave radar including health monitoring, automotive in cabin applications, autonomous robotics etc. Health uses include non-intrusive fall monitoring and heart and breathing rate monitoring without invading a patient’s privacy as point cloud data is used for tracking. In the automotive sector mmWave radar can be used as an effective module for gesture control and for occupant detection these multi use cases lend them self well to reducing the complexity of modern car systems with tasks previously carried out by several different sensors now possibly able to be covered by use of just one reducing complexity and cost for manufacturers. There are also many uses in the industrial robotics sensor with the sensor being able to counter many of the downsides of other sensors such as not being able to detect glass walls or being unable to detect objects which are low to the ground.