

## Status Report #1: Jerry Ding (Team A5)

This week, I was setting up the repositories needed to load the Yolo-v3 tiny pretrained model and convert it to be usable on Tensorflow instead of the default DarkFlow framework that the YOLO developers used to train their network.

It turns out that there are multiple toolkits to perform the conversion to a Tensor Protobuffer / chkpt file, with varying levels of user friendliness in the exposed interface to the model, and they are all incompatible with each other. As in, the code that uses the Protobuffer file to perform inference only works with the Protobuffer file made with one of these toolkits.

The first toolkit I tried was DarkFlow, which had the most users. It immediately failed with strange errors about missing features, and looking online for the error reveals that it only supports up to Yolo-v2.

The second toolkit, DW2TF went further. It produced the correct output files, but when I tried to use them for inference I found the result to be very sloppy. The user needs to know the names of arbitrary variables in the computation graph to set the inputs and the outputs to the network, and even then you'd only get raw data from the network. Processing this to a bounding box takes a bit more effort.

Lastly, tensorflow-yolo-v3 was able to perform the conversion (with a few hitches and several tries). This time, the interface to the network was better and one can get the bounding boxes from the network. I tested this system with random surveillance camera footage (outside the training data set) and it correctly drew a box around the perpetrator. :



This is on schedule with the Gantt chart, and my upcoming work will be to begin trying to test the I/O functionality of the Ultra96 board, in preparation for controlling motors with it. I should demonstrate the ability to send arbitrary bitstreams over a GPIO port.