Problem statement 2

First all of all very excited about this, I am huge fan of musk and tesla. Actually, I do believe the World is moving towards an electric future. A future where everything is connected with each other, So basically IoT. Okay coming back to the topic. I have heard of autonomous driving but the never really did look into the technology behind it.

Semantic segmentation is the understanding of an image at the pixel level, assigning an object class to each pixel of the image. For example, the picture to the left, this has motorcyclist turning, for semantic segmentation we have to delineate the boundaries of each object like the rider, bike and the background.

Each of them were assigned a different class.

This figure is a screenshot of tesla' fully autonomous driving, as you can see, it detects each and every object with its army of sensors from lidars to cameras, all this data in real time computing and making decisions. All this together makes autonomous driving possible.

This image towards right you can see, that light green box was generated by object detection and those inside those green boxes we have objects overlayed with color. These overlays of colors are obtained by semantic segmentation. This technology is still in early stages as to make more robust it requires highly manicured data to work properly, which can be difficult to collect. What I mean by this is the training data needs to be carefully collected and filtered so that the steering data is appropriate across all possible steering angles. The training data collection involves a human driving the simulated vehicle around the track in various turning scenarios to gather enough variety of steering angles to reduce the over-fitting of the neural network. Tesla is the only company which has these kind of data as I read an article last year that tesla auto pilot/autonomous has crossed 1 billion miles.