Virginia Tech Capstone Project

Object Detection and Tracking from Aerial Footage

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Summary
Our task was to implement a computer vision algorithm used to track and detect objects from aerial drone footage. Our motivation was to help the safety of soldiers who are traveling to an area where potential threats may lie. By tracking and detecting objects using a small drone, soldiers will be prepared of their surroundings resulting in increased safety. Our strategy was to use the YOLOv3 (You only look once version 3) model trained on the COCO (Common objects in context) data set to detect objects and implement the Kalman filter to track individual objects. We have two videos we experimented on, one at the Virginia Tech Drone cage, and the other in a parking lot. We have successfully tracked and detected different kinds of common objects from our videos. There are limitations on what kinds of objects we can detect due to our data as well as the height and angle of the drone footage. There are also tracking problems that will be discussed later in the results.