ECE 595 Autonomous Mobile Robots

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Project Proposal

For our project we hope to simulate and hopefully deploy an autonomous vision based tracking system for an unmanned aerial vehicle (UAV). This project will require the extensive use of computer software including implementing machine learning algorithms to detect and track the target. The algorithms will then send any relevant data to our control algorithms to fly the UAV. Our goal is to create a system where the UAV is able to maintain a constant distance from the ground target as it moves around a space.

To achieve this goal we plan to first gather and train a machine learning model to detect our target. It will be trained in Python with manually labeled training data to decide, based on where it is in relation to the target, what corrective action needs to be made. We will then give this feedback to a control algorithm which will command the drone to its new position. These transactions will most likely be done using ROS, and further investigation needs to be done into the resources available for this interaction. We plan to first simulate this in one of the suggested software options, and time permitting hope to deploy it to real hardware.

To document our progress we will be publishing our updates to our Github page here https://bweb5.github.io. Our Github will store our code, notes, and any major status updates. The repo will also be marked as open source and will leverage open source libraries and resources. We are very optimistic for this project and hope to get it working by the end of the semester!