1 Motivation

The project began when we were introduced to a competition called the Student Led Ideation Challenge (SLIC). Our group of three was looking for a project to undertake, and we were introduced to this project through our teacher. The goal of the project is simple to state: build an autonomous unmanned aerial vehicle that can navigate through an obstacle course, but this is an extremely complicated task, especially given that we were limited to using only optical based sensors. Autonomous navigation is one of the most promising fields of study when it comes to automation, and there are several different approaches one could take. Navigating through an obstacle course is an extremely daunting task, and not using ranging techniques like LIDAR just compounds these diffifulties. However, optical sensors do have distinct advantages over LIDAR, including the potential to be cheaper and lighter than LIDAR-based systems. Designing and constructing an effective vehicle is the first step, and designing and implementing an effective navigation schema is the (extremely challenging) next step.