



## Mechanical/Environmental Sustainability Project

### Unmanned Aerial Vehicle Design

#### Mission Statement

To provide advanced prototype designs for Unmanned Aerial Vehicles (UAV) at a low conceptual cost using 3D printing technology, while visualizing the models using Computer Aided Design (CAD) software.

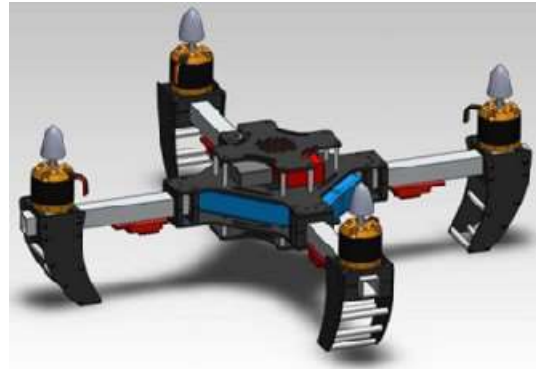
#### Synopsis

Half of the research was focused on the UAV system components, and the structural design. Initially it was decided to go with a 920 KV motor, an 18 amp ESC, and 10x6 propellers. Once the parts were purchased the designers began their work. Concurrently the team looked at different options for batteries and flight controllers. The team ended up choosing a 3s Lipo battery and a Hobby King KK2.0 flight control system.

The other half of the research looked into honeycomb structures. It was discovered that the honeycomb structure provided a nice rigid design. This gave the team designers ideas and inspiration for their quadcopter arm design. They were able to calculate the distance between the motors using the selected propeller dimensions.

The design team then started to work on the design of just the UAV's arm, which includes the motor mount, rotor housing, and the connected wire run. Each designer was able to offer their own take on a design in concert with the team's basic research.

Using Gateway Community College 3D printers part fabrication was started on several of the designs. Several team members have volunteered to continue to build a final working prototype during the Summer and Fall semesters.



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