



## Senior Design Project in Electrical & Computer Engineering



# Autonomous Blimp

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### UAV Background

The military is researching, developing, and implementing Unmanned Aerial Vehicles (UAVs) in many of their operations. The Coast Guard is also looking into using this technology for Search and Rescue and Law Enforcement applications. Using UAVs is a cheaper, more efficient, and safer way to carry out our missions instead of having humans do the work. The deepwater project is scheduled to have UAV aircraft to perform these missions and more, however research in UAVs is an ongoing endeavor.

Using an eleven foot blimp as a model UAV, we intend to understand the technical challenges faced by all UAVs and develop innovative solutions.



Coast Guard Deepwater UAV



The Blimp flying around the Billard Gymnasium

### Project Plan

In order to overcome the technical challenges of autonomously controlling the blimp, we plan on doing the following:

1. Design a three dimensional positioning system that is adaptable, easy to use, and reliable
2. Design a wireless interface to allow the computer to issue commands to the blimp
3. Design a digital controller to automatically control the blimp's speed, heading, and height. This controller will accept inputs from a wireless sensor array attached to the blimp.

### Project Deliverables

After solving the technical challenges of a UAV we are going to deliver a digital controller that can guide an eleven foot blimp around any room.

This will be achieved with an infrared positioning system, a sensor array on the blimp that wirelessly transmits data to the controller, and a digital controller that parses the data and decides which motors need to be activated next.



Why we need an autonomous controller!