Project Executive Summary:
(ECE Group) Using Ocean-Going Robots to Observe Wave Conditions

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Purpose:

To create a new motion sensing and data logging system to collect detailed wave travel information.

Objective:

This device will track wave travel direction, energy, and height, all while lasting for weeks on battery power. This information can be accessed and used with databases and simulation models to track wave information over a vast area of ocean. This in turn will provide valuable information to surfers, commercial vessels, and researchers about the ocean's behavior. Some applications of this data include safety of ocean conditions, tracking of tides/swells, and predicting coastal erosion.

Background information:

AUV’s or autonomous underwater vehicles are becoming increasingly popular in the study of oceanography. By equipping them with capable sensors to track motion, and physical attributes of the ocean water, researchers are able to source a variety of valuable information about the ocean’s characteristics and behavior. Types of sensors to include in these gliders involve accelerometers, gyroscopes, pressure sensors, tilt sensors, radar, lidar, and even acoustic sensors. By utilizing these sensors in a remote glider rather than a stationary device, a much larger range of the ocean can be sampled, allowing for a much more accurate collection of data from the ocean. Current technologies are not capable of sampling nearly as large of an area, and are easily damaged by adverse weather conditions.