Abstract

Micro-plastics are one of the most commonly found types of pollution in the environment. Project Thetis aims to reduce the commonality of micro-plastics by extracting them from anhydrous sand samples. Extraction will be done using electric force attraction between a surface with induced charge and the micro-plastics. Extracted micro-plastics will be held in the robot until they are deposited in its stationary home unit. Software will be designed to use a GPS system with geofencing to ensure the robot performs its task within a specified area.

Team Structure

- Electrical
- Software
- Logistics
- Design
  - Drivertrain
  - Sand Sorting

Future

Following the completion of the autonomous robot, Project Thetis aims for local implementation. Research will be conducted regarding upcycling methods for micro-plastics. Articles will be drafted for engineering journals.

Robot Rendering

![Robot Rendering](image)

Design Features

- 2 CIM Motors
- 1” Aluminum framing
- Raspberry Pi
- 11.1V Lithium Polymer Battery
- Adafruit Controller
- LiDAR
- BrecoFlex Pulleys

Software

![Software Diagram](image)

Microplastics

What are Microplastics?

- “Plastic debris can come in all shapes and sizes, but those that are less than five millimeters in length (or about the size of a sesame seed) are called “microplastics.”

Where are Microplastics found?

- Microplastics have been found from the Himalayan Mountains, to Arctic Snow, to Lake Tahoe. They have been identified in the air we breathe, in the fish we eat, and in the water we drink.