2025 GPS TRACKING SYSTEM

DESIGNED TO TRACK GPS COORDINATES DURING A SAILING TRIP AND CREATE A MAP TO HELP FUTURE YOUTH DURING THEIR VOYAGE

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CATEGORY: ENVIRONMENTAL STEWARDSHIP

Table of Contents

Introduction

There is an intrinsic relationship between the natural environment and the ability to navigate through it by traveling along natural waterways on a tall ship. This project will track GPS coordinates on a travelling sailing trip to create a visual map of that trip. As data of previous routes can be gathered and plotted, students in the future will have a better understanding of the geography of the waterways, help to establish patterns in their travel, and also recognize the environment within the context of their experience. By tracking and recording these routes is not only useful information for navigation, but also promotes environmental stewardship by creating a greater understanding of the natural interconnectedness we have with these spaces.

Proposal

This project proposes the use of a GPS-enabled tracking system to collect real-time sailing coordinates and later visualise them on an interactive map. By combining an Arduino GPS module for data collection with mapping tools like Google Maps, Python, or Excel, we can produce a detailed route map of the sailing trip. This map can be enhanced to show time-based movement, points of interest, and environmental observations, bridging the gap between technology and environmental appreciation.

Such a project supports environmental stewardship by encouraging future young voyagers to:

- Observe their routes in the context of natural waterway geography.
- Make connections between their activities and the surrounding ecosystem.
- Potentially contribute observations that could inform environmental studies, such as noting pollution hotspots.

Project Aims and Functionality

Aims:

1. **Track Sailing Routes:** Collect accurate GPS coordinates throughout the sailing trip.

2. **Visualise the Journey:** Plot collected coordinates onto a map to create a clear visual record of the route.
3. **Encourage Environmental Awareness:** Use the map to connect navigation with understanding of natural waterways and environmental conditions.
4. **Leverage Technology Responsibly:** Show how GPS, mapping software, and simple coding can be used to enhance appreciation of nature without intruding on it.

Functionality:

- The GPS module records latitude and longitude coordinates during the trip.
- Collected data is saved to a file via Arduino for later processing.
- After the sailing trip, Python or Excel is used to map the coordinates onto Google Maps.
- An interactive webpage or animation is to be created to show the sailing path over time.

Required Materials

- Arduino board (e.g., Arduino Uno 3 or Nano)
- GPS module (e.g., NEO-6M GPS module)
- Laptop to log in the coordinates over time
- Battery pack or portable power supply for collecting data during the voyage
- USB cable for programming the Arduino
- Computer with Python or Excel for data processing

Targeted People

- Future Broadreach students
- BroadReach Executives