

Leading university and conservation technology startup seek full stack developer to work on high tech ocean and fisheries sustainability project

21st June 2021

Introduction

Funded by Cisco Systems, Heriot-Watt University is collaborating with SafetyNet Technologies Ltd. (SNTech) to develop a novel system for monitoring the health of the oceans and optimising fisheries to reduce their impact. The project involves a diverse array of disciplines: fisheries scientists, engineers, business and data scientists. The project now needs you – a full stack developer – to create an online infrastructure and front end to join all the dots. You will be embedded into a technology team within SafetyNet Technologies, whilst working with engineering and fisheries science researchers at Heriot-Watt University in a project that will culminate in a real-world deployment on fishing vessels in Orkney.

We will be working with Cisco's platform-as-a-service, integrating with SNTech's custom-made hardware. As a Full Stack Developer, you should be comfortable around both front-end and back-end coding languages, development frameworks and third-party libraries. You are an independent worker, that is familiar being the sole representative of their discipline in a highly diverse team. You're not intimidated by ambiguity, and have a variety of tools, frameworks and tricks up your sleeve to create certainty from grey data. You have a willingness to compromise, but are unafraid to stand up for the needs of your technologies. If you want to apply your technical expertise to intractable conservation challenges, look no further!

Context

We have created a fishing net mounted oceanographic sensor for industrial-scale fishing vessels to harvest ocean data at the same time as catching fish. Whilst underwater, it measures water temperature, salinity, turbidity and other key parameters. These parameters, when collected at scale, are important for monitoring fisheries efficiency and compliance with sustainable fishing regulation, as well as creating mathematical models of the ocean that enable accurate weather prediction, climate modelling and fish species presence. Making these measurements at scale is expensive and difficult. By converting fishing vessels into ocean observation platforms, we overcome this challenge.

When the sensor, attached to the fishing gear, is brought above the water, it transfers its measurements to a computer aboard the vessel. Using Cisco's hardware, the measurements are sent wirelessly back to land, using a novel communication scheme provided by Cisco.

Your Challenge

This is where your role comes in. The measurements, sent via Cisco's hardware, need to be stored in a database, and visualised via a front end dashboard. The dashboard allows the user to browse historical ocean measurements made by the sensor over a wide geographical area,

and different depths. Additionally, fishing vessels will be using a third party app to record their fish catch composition. This data needs to be incorporated into the ocean measurements dataset, and browsable via the dashboard. This allows correlation between ocean conditions and catch outcomes – a key hypothesis of the project that enables sustainability outcomes such as predicting bycatch hotspots based on ocean parameters.

Due to Cisco's support for hardware, we envision the backend of the system relying heavily on Cisco functions and APIs. Cisco operate automated software services that pull data from the fishing vessel, and these need to be specified, integrated and managed. In addition to setting up the system, the backend and frontend will need to be monitored during sea trials in late Spring / early Summer 2022, as it is used by fishermen in Orkney.

Core skills

- Making high-level system architecture decisions, appropriate for a small-scale trial, but has potential for scaling up.
- Creating and following design briefs for creating web page user interactions
- Writing clean, scalable code for:
 - Developing front end website architecture
 - Developing back end website applications
 - Create effective APIs, security and data protection settings
- Version control, testing and bug fixing
- Working alongside hardware engineers who are developing IoT sensors that are feeding data into the system.
- Comfort developing interactions for a difficult environment and extreme set of users – fisheries, fishermen and at-sea.

Desirable skills

- Track record of previous similar project experiences
- Having worked on applications that accept IoT sensor data, and/or interfacing with data science applications, or data visualisation.
- Familiarity with common stacks
- Knowledge of multiple front-end languages and libraries (e.g. HTML/ CSS, JavaScript, XML, jQuery)
- Knowledge of multiple back-end languages (e.g. C#, Java, Python) and JavaScript frameworks (e.g. Angular, React, Node.js)
- Familiarity with databases (e.g. MySQL, MongoDB), web servers (e.g. Apache)
- A familiarity with UX design is not required: you will be able to work closely with SafetyNet Technologies to create great user experiences together.

Position details

Flexible to be part time or full time

Colleagues are based in Central London or Heriot Watt University. Candidate can be located at these locations or remotely elsewhere.

Contact

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