



## COVE Internship: Company Project Summaries – Summer 2021

### RBR

May/June and July/August

**Company:** RBR creates instruments to measure the blue planet. From the ocean abyss to the polar ice cap, their sensors track water parameters – temperature, depth, salinity, dissolved gases, pH, and many others. RBR develop sensors for multiple platforms, including gliders, floats, mooring lines, ship-based observations, etc

**Project:** With a global presence and core customer base, RBR is continuously learning more about their customer’s needs and about the gaps in the market that they would like to better understand, including strongholds of their competitors. As they are getting better at “knowing the unknowns”, they would like help to understand the areas/gaps that they are missing with more market/competitive analysis.

**Required Skills:** Must be able to work in a co-working environment with other entrepreneurs and industry people from many sectors. Looking for individuals with experience in database searching skills, experience with spreadsheets, experience with business operations (i.e. business development, market analysis, finance and accounting). Experience with communication tools like Confluence JIRA and Salesforce considered an asset.



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### COVE

May/June and July/August

**Company:** COVE's mission is to propel the ocean economy by providing high quality marine infrastructure and a collaborative space in which a community of ocean enterprises can start, grow and prosper. COVE's primary goal is to support ocean technology commercialization.

#### Project:

**Project 1:** In May of 2021, the Cove Multi Sensor Seabed Platform (the MSSP) will be deployed near the COVE dock and will be operated and controlled via a dockside access building.

There is a requirement to develop standard operating procedures that will become the "User's manual" for the Platform. These documents will include procedures for deployment and recovery of the platform, safety requirements, operation of the power and data systems associated with the platform, and operations of a cloud-based database management system that will store data retrieved from the platform. Additionally, the COVE Acoustic Test Tank requires similar operating procedures. These can be developed along with some design work associated with operations of the tank. Some assessment of user needs will be required.

**Required Skills:** Must be able to work within a small team, take initiative and interact with a variety of stakeholders. Must be competent with the Microsoft office suite. Good communication skills is important with the ability to interact and give presentations to COVE's stakeholders. Looking for individuals with electrical engineering, mechanical engineering and or data communications background. General understanding of marine systems or of the ocean industry considered an asset.

**Project 2:** The MSSP will deliver several data streams to shore, including video, sonar, and data from multiple advanced sensors. COVE would like to create visual representations of live data streams to demonstrate and help visualize the data. This will take the form of multiple visual displays of data obtained from the MSSP platform via the data infrastructure that is part of the project and may include processing, innovative visual interpretation of multiple data streams.

**Required Skills:** Students will use web technologies including HTML/CSS as well as development environments such as Python, Flask, and Linux tools including BASH, to develop a web based real-time visualization surrounding a subset of the data streams associated with the MSSP. This will require interacting with the project data architect and the entire team.



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### Perennia

May/June and July/August

**Company:** CMAR leads and supports research projects in collaboration with industry, government, community and other marine user groups that support the sustainable development of coastal resources in Nova Scotia. CMAR collects and analyzes biophysical and socio-economic data that provide the foundation for science-based decision making and foster innovation necessary to advance the long-term sustainable development of the fisheries and aquaculture industries.

CMAR was established to support the Nova Scotia Department of Fisheries and Aquaculture's growth strategy and operates as a special division under Perennia Food & Agriculture Inc.

CMAR is involved in a number of projects which can be viewed on our website: [www.cmar.ca](http://www.cmar.ca).

**Project:** CMAR has actively engaged in an extensive Coastal Monitoring Program throughout Nova Scotia (<https://cmar.ca/2020/07/14/coastal-monitoring-program/>) since 2017. While significant effort has been placed on our offshore environmental conditions, minimal information is available about our coastal conditions, specifically at a high temporal resolution. CMAR and their service provider, Leeway Marine, retrieve and deploy up to 55 sensor strings comprised of temperature, dissolved oxygen, and salinity sensors every year. CMAR closely collaborates with Nova Scotia's Department of Fisheries and Aquaculture (NSDFA). CMAR and NSDFA are working towards a Data Share Agreement to allow for transfer of all environmental data collected since 2007. The COVE's Internship Program provides a significant opportunity for the up and coming generation, across three disciplines, to be engaged in a program that uses science-based innovation to advance Nova Scotia's marine coastal resources. The proposed project aims to collect, analyze and manage big data sets.

**Required Skills:** This project is looking for three (3) individuals who have expertise with Big Data management. The proposed positions are: Field Technician, Statistical Analyst, and Data Management Officer. The Field Technician must hold a valid MED A3 and SVOP and is comfortable working on the water and working with oceanographic equipment. First aid certification considered an asset. The Statistical Analyst will process the offloaded data, QA/QC and trimmed with statistical package R. R Markdown will be used to generate county reports and will work with Nova Scotia's Open Data Portal and Canadian Integrated Ocean Observing System to upload data and reports for public use. This position is best suited for a fourth year student of statistics, environmental sciences, or related field either recently graduated or MSc Candidates. The Data Management Officer will be responsible to manage big data sets with data management software for ease of access, retrieval, share-ability and preservation. This position is best suited for fourth year student of computer science or related field, either recently graduated or MSc Candidates.



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### Impactful Health R&D

May/June and July/August

**Company:** Impactful Health R&D develops compostable active packaging to prolong the shelf life of fresh fish, increasing return on investment for the entire value chain while reducing organic waste and plastic pollution.

**Project:** This project is to help Impactful Health solidify their pre-commercialization strategy at 3 levels. The first would be 'Optimize it', which will involve a chemist/food scientist to conduct R&D lab work to further optimize their proprietary formulation and chemistry to reduce cost. The second is 'Build it', and that will involve an industrial/process engineer to put together a preliminary production line for manufacturing the technology. The third is 'Brand it', which will require a graphic designer/marketing student to come up with a branding strategy for the compostable active packaging and build a marketing strategy if possible.

**Required Skills:** Looking for individuals with a background in chemistry, food science, Industrial engineering and graphic design/interdisciplinary communications. Individuals will need to be able to work well in teams, take initiative, have good communication skills and have experience working in a wet lab.



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### Tidal Flyer Renewables Canada

May/June and July/August

**Company:** Tidal Flyer Renewables Canada Ltd. (TFRC) is licenced by Tidal Flyer Ltd based in Ireland ([tidalflyer.com](http://tidalflyer.com)). Tidal Flyer is a Research and Development company with over 14 years experience in tidal device development. The Tidal Flyer system is currently at Technology Readiness Level 3 and looking to move to the next level, which due to the unique nature of the Tidal Flyer system, means testing in a real environment.

**Project:** For hardware, TFRC needs to optimize the Tidal Flyer system's electrical generation by exploring the addition of control mechanisms and proximity sensors to provide optimal instruction to the self-trimming tail associated with each foil pair.

For business development, TFRC are exploring options to license and/or further develop the technology with larger business partners.

**Required Skills:** Looking for students with an electrical engineering/embedded systems background, as well as students with a business development and/or marketing background. Nice to have: people with prototype fabrication experience.



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### Deep Sense

May/June and July/August

**Company:** DeepSense unites the next generation of AI and machine learning experts with companies that want to harness the potential of data and lead the smarter ocean economy. By leveraging technology and research, companies can more easily use data to make decisions, optimize operations, and create new products, processes or services. All with low cost and low risk.

**Project:** DeepSense is striving to develop a mentorship program with students interested in AI, machine learning and ocean data. The program's goals are to increase student comprehension of ocean data and AI and machine learning. The mentorship program should be designed based on best practices.

**Required Skills:** Looking for students with a communication, marketing, public relations and/or business background. Individuals will need to be able to work well in teams, take initiative, have good communication skills and experience with website development and/or design programs is considered an asset.