Job Posting: 190994 - Position: Centre for Aerospace Research Spacecraft Communications Co-op

Co-op Work Term Posted:	2020 - Fall
App Deadline	09/11/2020 10:00 AM
Application Method:	Through UVic Posting System
Posting Goes Live:	09/04/2020 12:47 PM
Job Posting Status:	Approved

ORGANIZATION INFORMATION

Organization	University of Victoria
Division	Centre for Aerospace Research

JOB POSTING INFORMATION

Special Job Requirements

Work Duration: 8 months (An 8 month employment period is registered as 2 separate, consecutive work terms)

Please ONLY apply if you are available for 8 months, and state your availability CLEARLY in your cover letter.

For Engineering Undergraduate Students: Before applying to this posting, it is your responsibility to have completed the appropriate pre-requisite courses for this length of work term, and to understand how this length of work term affects your academics. If this means you will be registered in a 5th or higher work term, the full co-op tuition fee (equal to two installments) will be charged for each additional work term above the mandatory four. See links below for more details.

- Engineering Tuition - installments (two installments per work term). https://web.uvic.ca/calendar2019-09/undergrad/info/tuition/engineering-tuition.html
- Undergraduate Tuition - the complete co-op fee **(for those doing a 5th or higher work term)**. https://web.uvic.ca/calendar2019-09/undergrad/info/tuition/undergrad-tuition.html

Co-op Work Term	2020 - Fall
Position Type (Disclaimer: not all types available in all programs)	Regular Co-op, Full Time
Co-op Work term Duration	8 Months Full Time (2 Work Terms)
Job Title	Centre for Aerospace Research Spacecraft Communications Co-op
Job Location	Victoria
Region	BC-Victoria (Capital Region)
Salary/Wage	$3,000/month
Number of Positions	2
Work Abroad	No

Job Description

The University of Victoria Center for Aerospace Research is developing a 2U CubeSat as part of the Canadian CubeSat Project initiative of the Canadian Space Agency. This satellite, named ORCASat, will be launched to Low Earth Orbit in 2021 with a scientific mission to aid the calibration of ground based optical telescopes used for astronomical observations.

One key aspect of this satellite mission is radio communications. The system used for this purpose consists of a ground and a space station, which are both developed by students at the University of Victoria. Both of these stations have significant firmware and software components, outlined below.

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- The **space station** is based around a System on Chip from Texas Instruments, featuring a radio core integrated with an 8051 microcontroller. This SoC runs embedded C code, and it is responsible for two directional information interchange between the on-board computer of the satellite, and the ground station.
- The **ground station** is built around an USRP B210 software defined radio. This interfaces between the in-house mission control software, and the space station. To interact with this radio, highly customized GNU Radio blocks are used, which are based on Python and C++.

One co-op job opening with a focus on the space station and one opening with a focus on the ground station are being considered, for a duration of 8 months each, between September 2020 and April 2021.

Responsibilities

The student focused on the space segment may be responsible for the following tasks:

- Development of bare metal embedded firmware in C for the CC1110 SoC, including the use of an open source, Linux based toolchain for development.
- Design and implementation of firmware tests to verify the firmware functionality created for the space station.
- Other duties as assigned.

The student focused on the ground segment may be responsible for the following tasks:

- Design and implementation of custom digital signal processing algorithms in GNU Radio for the satellite ground station. This may involve coding in Python, or C++.
- Design and implementation of software tests to verify the software functionality created for the ground station.
- Other duties as assigned.

Qualifications

Required Experience

The student is required to have the following background for the space segment position:

- Currently enrolled in Engineering or Computer Science at university level. Electrical Engineering or Software Engineering students are preferred.
- Demonstrated C embedded firmware development experience through coursework and relevant professional or extracurricular experience.
- A demonstrated understanding of, and experience with the software development life cycle, including coding standards, code reviews, source control, build processes, and testing.

The student is required to have the following background for the ground segment position:

- Currently enrolled in Engineering or Computer Science at university level. Electrical Engineering or Software Engineering students are preferred.
- Demonstrated understanding of digital signal processing techniques through coursework and relevant professional or extracurricular experience.
- Demonstrated experience with Python and C++ through coursework or relevant professional and extracurricular experience.
- A demonstrated understanding of, and experience with the software development life cycle, including coding standards, code reviews, source control, build processes, and testing.

Preferred Experience

The following items would be considered an advantage during selection:

- Amateur radio certificate
- Coursework related to telecommunications
- Coursework related to RF

For relevant employers as defined by the BC Criminal Review Act: Will this position No

require a co-op student to complete a Criminal Records check?	
Minimum Academic Year Completed	2
Minimum Work terms Completed	0
Are there any restrictions that would hinder hiring of non-Canadian students with a valid work permit?	No

APPLICATION INFORMATION

Application Procedure	Through UVic Posting System
All Degrees and Disciplines	No