Position Description Form (PDF)

College: Sir Sandford Fleming

Incumbent's Name: TBD

Position Title: Research Technologist - CAMIIT Payband: I

Position Code/Number (if applicable): S00657

Scheduled No. of Hours____35____

Appointment Type: ____X___12 months _____less than 12 months

Supervisor's Name and Title: Brett Goodwin, Vice-President, Applied Research & Innovation

Completed by: Mary Lou McLean

Date: February 9, 2021

Signatures:

Incumbent: (Indicates the incumbent has read and understood the PDF) Date:

Supervisor:

Date:

Instructions for Completing the PDF

- 1. Read the form carefully before completing any of the sections.
- 2. Answer each section as completely as you can based on the typical activities or requirements of the position and not on exceptional or rare requirements.
- 3. If you have any questions, refer to the document entitled "A Guide on How to Write Support Staff Position Description Forms" or contact your Human Resources representation for clarification.
- 4. Ensure the PDF is legible.
- 5. Responses should be straightforward and concise using simple factual statements.

Position Summary

Provide a concise description of the overall purpose of the position.

The Research Technologist plays a key role in applied research projects at the Centre for Advancement of Mechatronics & Industrial Internet of Things (CAMIIT)

This position will be responsible for installing, operating and maintaining a wide range of experiments, technologies and prototype development at the CAMIIT. In collaboration with the Research Scientist, the incumbent will support project requirements according to project plans, including tracking project deliverables, monitoring projects, recording and summarizing data, performing basic statistics, writing data reports and providing the Research Scientist and VP, Applied Research & Innovation with regular updates. They will also be involved in software development, investigating signal processing and machine learning algorithms, and developing new features through a combination of experimental/theoretical research. As well, the Research Technologist will play a key role in the daily operations of the CAMIIT and be a key participant in renovations and maintenance of the facility, including working with external vendors, contractors and internal departments, such as Physical Resources, IT S and Purchasing.

Duties and Responsibilities

Indicate as clearly as possible the significant duties and responsibilities associated with the position. Indicate the approximate percentage of time for each duty. Describe duties rather than detailed work routines.

		Approximate % of time annually*
1.	Facilities & Equipment The incumbent will assist with installing and maintaining equipment and infrastructure, undertake trouble-shooting and repair work and lead renovation projects. The incumbent will maintain records, recommend and perform service as required and respond to the adaptive management approach to the research underway at the CAMIIT. In addition, the incumbent will adapt and modify facilities and equipment to address new projects and purchase equipment under approval of the Vice- President, Applied Research & Innovation and within set timelines. Working with the Office of Applied Research & Innovation, the Incumbent will provide equipment specifications (RFP details) required for equipment procurement or price estimates to be used for grant proposals. Working with Physical Resources, and external contractors the incumbent will provide guidance and expertise on the installation and set-up of new equipment and projects, as well as the decommissioning of projects and equipment.	25%
2.	Project work. The incumbent will assist with the implementation and monitoring of a variety of simultaneous research projects occurring at the CAMIIT. In addition, the incumbent will participate with the Research Scientist in partner meetings and project planning sessions to provide feedback in relation to methodologies and modification of product studies and experimental designs.	25%

3.	25%
4.	20%
5.	5%
	5

*	To help you estimate approxin	nate percentages:
	½ hour a day is 7%	1 hour a day is 14%
	½ daya week is 10%	½ daya month is 2%
	1 week a year is 2%	

1 hour a week is 3% 1 day a month is 4%

Support Staff PDF

1. Education

A. Check the box that best describes the **minimum** level of **formal** education that is required for the position and specify the field(s) of study. Do not include on-the-job training in this information.

Up to High School		1 year certificate		2 year diploma
Trade certification	Х	3 year diploma/degree		4 year degree or 3 year diploma / degree plus professional certification
Post graduate degree (e.g.	Mas	ters) or 4 years degree plus p	orofe	essional certification

 \Box Doctoral degree

Field(s) of Study:

Computer Science/Network Engineering/Mechatronics

B. Check the box that best describes the requirement for specific course(s), certification, qualification, formal training or accreditation in addition to and not part of the education level noted above and in the space provided specify the additional requirement(s). Include only the requirement that would typically be included in the job posting and would be acquired prior to the commencement of the position. Do not include courses that are needed to maintain a professional designation.

х	No additional requirements	
	Additional requirements obtained by course(s) of a total of 100 hours or less	
	Additional requirements obtained by course(s) of a total between 101 and 520 hours	
	Additional requirements obtained by course(s) of a total of more than 520 hours	

2. Experience

Experience refers to the minimum time required in prior position(s) to understand how to apply the techniques, methods and practices necessary to perform this job. This experience may be less than experience possessed by the incumbent, as it refers only to the minimum level required on the first day of work.

Check the box that best captures the typical number of year of experience, in addition to the necessary education level, required to perform the responsibilities of the position and, in the space provided, describe the type of experience. Include any experience that is part of a certification process, but only if the work experience or on-the-job training occurs after the conclusion of the educational course or program.

Less than one (1) year	
Minimum ofone (1) year	
Minimum of two (2) years	

X	Minimum of three (3) years	 Experience working with wireless networking technologies, machine learning, big data analysis, software development, cloud computing, deep learning, sensor applications, control system design, mechatronics. Skilled in proposal and report writing, research design and methodology development Proficient in project management Good communication, interpersonal and collaborative relationship building skills Superior analytical and problem -solving skills Proficient in data analysis, machine learning techniques, database reporting tools, working with multiple systems and points of integration Experience in data mining and building data driven models to draw insights from data Expert-level knowledge of spreadsheets, databases and project planning tools, programming language (Python) Experience in signal processing using Matlab or Octave Experience working independently in a customer-service focused team within a fast-paced business environment featuring critical deadlines, multiple projects and competing priorities Dealing with confidential / sensitive information Ability to understand advanced technical concepts Excellent communication skills for coordinating across multidisciplinaryteams
	Minimum offive (5) years	
	Minimum ofeight (8) years	

3. Analysis and Problem Solving

This section relates to the application of analysis and judgement within the scope of the position.

The following charts help to define the level of complexity involved in the analysis or identification of situations, information or problems, the steps taken to develop options, solutions or other actions and the judgement required to do so.

Please provide up to three (3) examples of analysis and problem solving that are regular and recurring and, if present in the position, up to two (2) examples that occur occasionally:

	#1 regular & recurring
Key issue or problem encountered.	An advanced research project is initiated which requires planning, design, analysis and development. Due to the novelty of the research project, it is likely that the proposed approach may require additional re-configuration and improvement during the execution and depending on the availability of the required database.
How is it identified?	In consultation with the Research Scientist, the incumbent must engage in a process of repeated modification and improvement of the data analysis and model development process in order to identify a proper solution.
Is further investigation required to define the situation and/or problem? If so, describe.	Further investigation is required once additional sources of data is acquired which requires integration of the new features and information into the models. The incumbent will work with the Research Scientist, using analytical tools to investigate and analyze the necessary changes and modifications.
Explain the analysis used to determine a solution(s) for the situation and/or problem.	The performance and reliability of the existing methodologies and models will be examined and evaluated using the new set of data and information. Efforts will be taken to enhance and optimize the model. This may include optimizing and adjusting the underlying algorithms and model structure in order to obtain desirable accuracy and outcome.
What sources are available to assist the incumbent finding solution(s)? (eg. past practices, established standards or guidelines).	The analysis frequently involves online searches of related research works as well as in-house knowledge base articles.

3. Analysis and Problem Solving

	#2 regular & recurring
Key issue or problem encountered	Evaluating, structuring and prioritizing tasks and proposed research projects so that they are completed in line with respective deadlines and allocated resources.
How is it identified?	Research and development projects are very complex. Projects require careful definition. Working with the Research Scientist, the incumbent must review the research question and determine the best way to address it in a way that is timely and efficient and resolves the presenting research challenge.
Is further investigation required to define the situation and/or problem? If so, describe.	The incumbent must use proper tools and investigation to define the scope of work and methodology by creating clear and testable solutions. Judgment must be used to define the problems in ways that both meets the needs of clients and also aligns with the resources and abilities of the Research Scientist. After the project is completed, the incumbent must provide insight and recommendations based on the analysis and conclusion of the project. This requires expressing scientific information in a way that is useful and practical.
Explain the analysis used to determine a solution(s) for the situation and/or problem.	If the proposed solution appears to be feasible, the incumbent will prepare a functional environment comprised of data for further analysis.
What sources are available to assist the incumbent finding solution(s)? (eg. past practices, established standards or guidelines).	The incumbent mayuse various sources of information including literature, best practice, consultation with experts and applicable standards to seek proper solution and approach to address the research problem.
	#2 regular 8 requiring
Key issue or problem encountered	#3 regular & recurring
How is it identified?	
Is further investigation required to define	

the situation and/or problem? If so, describe.

Explain the analysis used to determine a solution(s) for the situation and/or problem.

What sources are available to assist the incumbent finding solution(s)? (eg. past practices, established standards or guidelines).

fine		
nea		
the		
the bast		
	·	

4. Planning/Coordinating

Planning is a proactive activity as the incumbent must develop in advance a method of acting or proceeding, while coordinating can be more reactive in nature.

Using the following charts, provide up to three (3) examples of planning and/or coordinating that are regular and recurring and, if present in the position, up to two (2) examples that occur occasionally:

	#1 regular & recurring
List the project and the role of the incumbent in this activity.	In consultation with the Research Scientist the incumbent is required to monitor daily tasks for other team members (both internal and external) to ensure that assigned tasks and projects are on track and executed in a timely fashion.
What are the organizational and/or project management skills needed to bring together and integrate this activity?	The incumbent should demonstrate excellent organizational, communication and interpersonal skills. Knowledge of project management skills is required. Each project has a slightly different team of contributors. The incumbent will assist with scoping the project, communicating the scope and plan to other team members and managing the exceptions. Progress is tracked using various tools (simple spreadsheets to detailed Microsoft Projects) and communicated back to colleagues and partners. The incumbent must be cognizant of the deadlines established in the research plan so that deadlines are met and tasks must be prioritized accordingly
List the types of resources required to complete this task, project or activity.	In consultation with the Research Scientist, the incumbent would use product documentation, module documentation, and project management tools to create the project plan. They would use existing organizational structures and client meetings to ensure that the priorities continue to be represented.
How is/are deadline(s) determined?	Deadlines are established in conjunction with the industry partner and the Research Scientist. When drafting a project plan, the scheduling must take into account the influencing operational and external activities taking place in the CAMIIT facility. Ultimately deadlines are negotiated directly with the industry partners. Incumbent does not assign deadlines to individuals.
Who determines if changes to the project or activity are required? And who determines whether these changes have an impact on others? Please provide concrete examples.	Small changes (less than two weeks) can proceed with the approval of the Research Scientist. Larger changes will be decided by the Research Scientist in consultation with the industry partner. It may be required to change the priorities and deadlines given certain circumstances dictated by the partner's priorities and needs.

4. Planning/Coordinating

	#2 regular & recurring	
List the project and the role of the incumbent in this activity.	In consultation with the Research Scientist the incumbent will plan and lead experimental activities.	
What are the organizational and/or project management skills needed to bring together and integrate this activity?	Incumbent must maintain CAMIIT records of research experiments and lead activities associated with running of the experiment as outlined in the project plans, experimental plans, and SOPs developed in coordination with the Research Scientist. Coordination will involve collaborating with other CAMIIT staff to carry out the requirements stated in these documents, making sure they are completed on time and completed correctly. The incumbent will also be responsible for data review and entry, development of final data reports, and at times communicating results with clients.	
List the types of resources required to complete this task, project or activity.	CAMIIT manuals and SOPs, experimental handbooks, journals, internet sources, as well as Fleming personnel	
How is/are deadline(s) determined?	Deadlines are determined by project agreements and in consultation with the Research Scientist, industry partners and project collaborators.	
Who determines if changes to the project or activity are required? And who determines whether these changes have an impact on others? Please provide concrete examples.	The incumbent, in collaboration with the Research Scientist will determine if these changes are required and if they impact other areas, which could include changing of the project plan or informing partners of delays.	
#3 regular & recurring		
List the project and the role of the incumbent in this activity.	Responsible for inventory control in the CAMIIT.	
What are the organizational and/or project	The incumbent will need to be able to proactively	

What are the organizational and/or project management skills needed to bring together and integrate this activity?

List the types of resources required to complete this task, project or activity.

The incumbent will need to be able to proactively evaluate and monitor the amount of supplies required for current research and be able to forecast for coming projects. The incumbent will need to work with other CAMIIT staff to collaborate on purchasing, and stocking of supplies.

Inventory control spreadsheets will be used as a resource and will be used to keep inventory up to date. As well, the incumbent will access supplier websites for pricing.

How is/are deadline(s) determined?	For projects, deadlines are determined in collaboration with the Research Scientist and other CAMIIT staff. Other deadlines for orders can be determined based on urgency of need to meet research requirements.
Who determines if changes to the project or activity are required? And who determines whether these changes have an impact on others? Please provide concrete examples.	If supplies are not available, the incumbent would discuss with the Research Scientist and as soon as possible will evaluate options and determine if it will have an effect on projectoutcomes.

Support	Staff F	PDF
---------	---------	-----

4. Planning/Coordinating	
	#1 occasional (if none, please strike out this section)
List the project and the role of the incumbent in this activity.	The incumbent will be responsible for planning and coordinating research work that takes place in the field at partner locations. This will involve planning all logistics, including travel, accommodations, vehicle rental, staffing, equipment and supplies needed.
What are the organizational and/or project management skills needed to bring together and integrate this activity?	The incumbent will need to be able to proactively evaluate the amount of resources required for the field work in terms of time, people, equipment and supplies and plan well ahead of the trip to ensure nothing is missed. The ability to proactively schedule and order what is needed for the trip and to ensure the safe transport of people and supplies is essential.
List the types of resources required to complete this task, project or activity.	Project plans, websites, vendor supply lists, Excel
How is/are deadline(s) determined?	Determined by the deliverables set out in the project plan
Who determines if changes to the project or activity are required? And who determines whether these changes have an impact on others? Please provide concrete examples.	This is determined by the incumbent in collaboration with the Research Scientist and the industry partner.
	#2 occasional (ifnone, please strike out this section)
List the project and the role of the incumbent in this activity.	
What are the organizational and/or project management skills needed to bring together and integrate this activity?	
List the types of resources required to complete this task, project or activity.	
How is/are deadline(s) determined?	
Who determines if changes to the project or activity are required? And who determines whether these changes have an impact on others? Please provide concrete examples.	

5. Guiding/Advising Others

This section describes the **assigned responsibility** of the position to guide or advise others (e.g. other employees, students). Focus on the actions taken (rather than the communication skills) that directly assist others in the performance of their work or skill development.

Though Support Staff cannot formally "supervise" others, there may be a requirement to guide others using the incumbent's job expertise. This is beyond being helpful and providing ad hoc advice. It must be an assigned responsibility and must assist or enable others to be able to complete their own tasks.

Check the box(es) that best describe the level of responsibility assigned to the position and provide an example(s) to support the selection, including the positions that the incumbent guides or advises.

Regular & Recurring	Occasional	Level	Example
Х		Minimal requirement to guide/advise others. The incumbent may be required to explain procedures to other employees or students.	Provides clarification regarding research process and methodologies to students, or other research team members. Explaining research plans and the scope of work to other team members and reviewing and evaluating interim research findings with the team members.
Х		There is a need for the incumbent to demonstrate correct processes/ procedures to others so that they can complete specific tasks.	The incumbent is required to explain and demonstrate a course of action for the purpose of performing research and development activities. Also coordinates the efforts of the functional work group, monitoring tasks and ensuring project stays on schedule.
	Х	The incumbent recommends a course of action or makes decisions so that others can perform their day-to-day activities.	Coordinates the efforts of project team members (students and technicians), monitoring tasks and ensuring project stays on schedule. Utilizes expertise to assist technicians and other staff by designing procedures, protocols and methods and recommend the best course of action for others.
		The incumbent is an active participant and has ongoing involvement in the progress of others with whom he/she has the responsibility to demonstrate correct processes/procedures or provide direction.	

_		
	The incumbent is responsible for allocating tasks to others and recommending a course of action or making necessary decisions to ensure the tasks are completed.	

6. Independence of Action

Please illustrate the type of independence or autonomy exercised in the position. Consideration is to be given to the degree of freedom and constraints that define the parameters in which the incumbent works.

Occasional (if none, please strike out this section) djustments of techniques, adaptation of rocesses, refinement of methods			
What rules, procedures, past practices or guidelines are available to guide the incumbent? Regular and Recurring Occasional (if none, please strike out this section)			
Research Scientist would provide minimal direction n multi-departmental projects			

Regular and Recurring	Occasional (ifnone, please strike out this section)
Feedback from V-P, Applied Research & Innovation, Research Scientist, industry partners and other CAMIIT staff	

6. Independence of Action

Describe the type of decisions the incumbent will make in consultation with someone else other than the Supervisor?		
Regular and Recurring	Occasional (ifnone, please strike out this section)	

making decisions as needed for IT needs or requesting something from facilities, etc.)

Describe the type of decisions that would be decided in consultation with the Supervisor.		
Regular and Recurring	Occasional (ifnone, please strike out this section)	
Permission to access funds for items not specificallypart of the approved budget (e.g. major repairs or purchase of capital equipment).	Situations where incumbent feels faculty or student demands may infringe on policies or rules of College.	
All health and safety as well as security issues requiring managerial attention or intervention.		

Describe the type of decisions that would be decided by the incumbent.			
Regular and Recurring	Occasional (ifnone, please strike out this section)		
CAMIIT daily operations and scheduling, training of student workers			
Research methodologies and adapt existing instrumentation to perform required analysis.			
Finding efficiencies in routine CAMIIT operations.			
Implementing installation and decommissioning of projects (technologies, experiments)			

7. Service Delivery

This section looks at the service relationship that is an assigned requirement of the position. It considers the required manner in which the position delivers service to customers. It is not intended to examine the incumbent's interpersonal relationship with those customers and the normal anticipation of what customers want and then supplying it efficiently. It considers how the request for service is received and the degree to which the position is required to design and fulfil the service requirement. A "customer" is defined in the broadest sense as a person or groups of people and can be internal or external to the College.

In the table below, list the key service(s) and its associated customers. Describe how the request for service is received by the incumbent, how the service is carried out and the frequency.

Information on the service		Customer	Frequency
How is it received?	How is it carried out?		(D, W, M. I)*
Conducting tours, demonstrating related CAMIIT activities during tours, demonstrating techniques	Personal contact, tours	Students, faculty, general public, industry partners, funders.	I
New experiment/protocol required	Develop a new experiment/protocol to meet customer needs	Industry partners	М
To install / decommission a new technology or piece of equipment	Develop and research existing installations to gather information necessary for the planning and implementation of designs	CAMIIT staff industry partners.	М
To provide quality research data	Develop and follow quality control (assurance) measures to ensure repeatability and data integrity, including recording and summarizing data, performing basic statistics and writing data reports.	CAMIIT staff and industry partners	D

* D = Daily W = Weekly M = Monthly I = Infrequently

8. Communication

In the table below indicate the type of communication skills required to deal effectively with others. Be sure to list both verbal (e.g. exchanging information, formal presentations) and written (e.g. initiate memos, reports, proposals) in the section(s) that best describes the method of communication.

Communication Skill/Method	Example	Audience	Frequency (D, W, M ,I)*
Exchanging routine information, extending common courtesy	Inquiries and correspondence related to industry partners resources and data.	CAMIIT staff and industry partners	D
	Networking at conferences or with product user-groups.		1
Explanation and interpretation of information or ideas	Sharing information, offering solutions, guidance, follow up and collaboration on projects	Industry partners, CAMIIT staff and students	W
	Application data exchange, liaison, reporting techniques, and solution sharing	CAMITT staff and industry partners	Μ
Imparting technical information and advice	Discussions regarding specific functionality of the system. Discussions with end-users on possible changes to the system, procedural use of the system, and/or system trouble-shooting	CAMIIT staff and students, ITS; Technical and Business Analysts; end-users	D
	Discussions regarding problems with systems or possible changes to systems, how to use system, troubleshooting.	CAMIIT staff and students, ITS; Technical and Business Analysts; end-users	W
	Support/Problem resolution and services. Imparting functional or procedural clarifications or facilitating informal learning opportunities.	CAMIIT staff and students, ITS; Technical and Business Analysts; end-users	W

	Software needs and requirements support/problem resolution and services	CAMIIT staff and students, ITS; Technical and Business Analysts; end-users	W
	Explaining research plans and methodologies and providing instruction on how to conduct the required tasks.	Students, interns and new employees	Μ
Instructing or training			
Obtaining cooperation or consent			
Negotiating			

* D = Daily W = Weekly M = Monthly I = Infrequently

9. Physical Effort

In the tables below, describe the type of physical activity that is required on a regular basis. Please indicate the activity as well as the frequency, the average duration of each activity and whether there is the ability to reduce any strain by changing positions or performing another activity. Activities to be considered are sitting, standing, walking, climbing, crouching, lifting and/or carrying light, medium or heavy objects, pushing, pulling, working in an awkward position or maintaining one position for a long period.

Physical Activity	Frequency (D, W, M, I)*	Duration			Abilit	Ability to reduce strain	
		< 1 hr at a time	1 - 2 hrs at a time	> 2 hrs at a time	Yes	No	N/A
Sitting at a desk/computer	D		х		Х		
Walking, Standing	D	X			Х		
Lifting		X			Х		

* D = Daily W = Weekly M = Monthly I = Infrequently

If lifting is required, please indicate the weights below and provide examples.

X Light (up to 5 kg or 11 lbs)

Medium (between 5 to 20 kg or 11 to 44 lbs)

Heavy (over 20 kg or 44 lbs)

Manuals, printouts, equipment

10. Audio Visual Effort

Describe the degree of attention or focus required to perform tasks taking into consideration:

- the audio/visual effort and the focus or concentration needed to perform a task and the duration of the task, including breaks (eg. up to 2 hours at one time including scheduled breaks)
- impact on attention or focus due to changes to deadlines or priorities
- the need for the incumbent to switch attention between tasks (eg. multi-tasking where each task requires focus or concentration)
- whether the level of concentration can be maintained throughout the task or is broken due to the number of disruptions

Provide up to three (3) examples of activities that require a higher than usual need for focus and concentration.

Activity #1	Frequency	Average Duration		
	(D, W, M, I)*	Short < 30 mins	Long up to 2 hrs	Extended > 2 hrs
Analysis and evaluation of sensitive data and drawing insight and conclusion from model development processes	D		Х	
Can concentration or focus be maintained throughout the duration of the activity? If not, why?				

X Usually

□ No There are occasional interruptions from staff.

Activity #2	Frequency		Average Duration		
	(D, W, M, I)*	Short < 30 mins	Long up to 2 hrs	Extended > 2 hrs	
Signal processing and algorithm development	M		X		
Can concentration or focus be maintained throughout the duration of the activity? If not, why?					

X Usually

□ No

Activity #3	Frequency (D, W, M, I)*	Average Duration		
		Short < 30 mins	Long up to 2 hrs	Extended > 2 hrs
Writing reports, research plans and proposals	W			Х
Can concentration or focus be maintained throughout the duration of the activity? If not, why? X Usually □ No				

* D = Daily W = Weekly M = Monthly I = Infrequently

11. Working Environment

Please check the appropriate box(es) that best describes the work environment and the corresponding frequency and provide an example of the condition.

Working Conditions	Examples	Frequency (D, W, M, I)*
X acceptable working conditions (minimal exposure to the conditions listed below)	Office environment and CAMIIT lab	D
accessing crawl spaces/confined spaces		
dealing with abusive people		
dealing with abusive people who pose a threat of physical harm		
difficult weather conditions		
 exposure to very high or low temperatures (e.g. freezers) 		
X handling hazardous substances	Exposure to soldering and solvents in the lab	D
□ smelly, dirty or noisy environment		
X travel	Incumbent may be required to travel to the test facility or client sites for various functions of testing and data collection	М
□ other (explain)		
* D = Daily M = Monthly W = Weekly	I = Infrequently	نــــــ