

PROFESSOR INTELLIGENT AND AUTONOMOUS EMBEDDED SYSTEMS (AP 20-03) CENTRE ÉNERGIE MATÉRIAUX TÉLÉCOMMUNICATIONS Tenure-track Position

Context and summary

Institut national de la recherche scientifique (INRS) is the only institution in Québec (Canada) dedicated exclusively to graduate level university research and training. The influence of our faculty and students extends around the world. In partnership with the community and with industry, we are proud to contribute to the development of society through our discoveries and through the training we provide to a new generation of scientific, social, and technological innovators.

INRS would like to fill a new faculty position in the area of **Intelligent and Autonomous Embedded Systems with Integration of Sensing, Mechatronics, Connectivity, and/or Control**. This new position aims at the transfer of knowledge and technologies to sectors that include, but are not limited to, the industrial internet of things (IIoT), consumer electronics, manufacturing, autonomous vehicles; transportation, surveillance and monitoring, energy and process systems, environment and natural resources. The areas of expertise of interest are theory, modeling, computation, experimentation or a combination thereof of embedded circuits and systems – including their design, implementation, and applications (mixed integration of microelectronics - as a compulsory basis - with RF, THz, VLC, optical, and/or photonic domains/interconnects will be an asset).

The Centre hosts a unique major research infrastructure on nanostructures and femto-science (<http://mn.emt.inrs.ca/EN/inf.htm>; comprising the Laboratory of Micro and Nanofabrication, the "Advanced Laser Light Source (ALLS)" and the "Advanced Imaging Infrastructure"), and a world-class research laboratory in the field of wireless communications and radio frequency. The new faculty will work in an environment where over forty professors-researchers undertake leading-edge research and training in diverse areas of sustainable energy, advanced materials, ultrafast photonics, telecommunication systems, and nanobiotechnology.

INRS follows equality of employment access and employment equity programs. The Institute invites women, visible minorities, ethnic minorities, Indigenous people, and people with disabilities to apply and encourages candidates to identify themselves as such in their applications so that the selection committees can take this into account.

INRS also asks its selection committees to take into account career interruptions and any special circumstances¹ that may have adversely affected applicants' record of research achievements. This will enable the selection committees to more accurately assess applicants' productivity. Applicants are therefore encouraged to explain any such interruptions or special circumstances in their cover letter.

All qualified candidates are encouraged to apply; however, priority will be given to Canadians and permanent residents.

Main duties and responsibilities

- Develop an original and innovative research program;
- Establish collaborations with research teams already in place, while developing or maintaining partnerships with groups outside the EMT Research Center. The ability to develop partnerships with the private sector is particularly valuable;
- Secure external funding from a variety of funding agencies, both provincial and federal, also involving various partners from the public and private sectors whenever needed/pertinent;
- Participate in teaching and training at the graduate level (both M.Sc. and Ph.D. students), as well as supervising post-doctoral fellows and research personnel.

Requirements

- Doctorate in a relevant discipline (Electrical and Computer Science engineering or a closely related discipline);
- Solid research expertise in the integration of embedded systems, if possible (i.e., it will be a big asset), in relationship with one of the four inter-twined research areas below:
 - 1) **Sensing**: Embedded systems that integrate wearables or sensor front-ends in the acoustic, electromagnetic, optical, mechanical, chemical, or biological fields, etc.; and/or wireless power harvesters/transmitters from different energy sources (electromagnetic, mechanical, chemical, renewable, etc.).
 - 2) **Mechatronics**: Embedded systems that integrate MEMS, actuators, electromechanical devices, servomotors, stretchable electronics, electronic skins, haptic devices, microfluidic and nanofluidic devices, etc.
 - 3) **Connectivity**: Embedded systems that integrate wireless communication systems and networking, wireless sensor networks, RF IC design, large interconnected devices and systems, cooperation and coordination, etc.
 - 4) **Control**: Embedded systems that integrate automation, remote control, predictive control, mini-robotics, assistive technologies, swarms, etc.
- Excellent scientific record illustrating leadership and innovation that will allow developing successfully a solid and an independent research programme;
- Ability to work in multidisciplinary teams and networks as well as in collaboration with industrial partners;
- Aptitude for basic and applied research, as well as multidisciplinary teaching and mentoring at the masters and doctorate levels;
- Entrepreneurial qualities and demonstrated ability to secure external research funding.

Working language

- French is the working language of the Institute. Fluency in English is required.

Candidates whose native language is not French are encouraged to apply. The Centre will provide them with all the resources necessary to facilitate their learning of the French language.

Workplace

Institut national de la recherche scientifique (INRS)
Centre Énergie Matériaux Télécommunications
800 De La Gauchetière W., Suite 6900
Montreal (Quebec, CANADA) H5A 1K6

Salary

In accordance with the collective agreement in effect at INRS.

How to apply?

Interested applicants should send their application including a complete curriculum vitae, a copy of their three most significant publications, a three-page summary of their research interests, a statement of teaching experience and philosophy, and the names and contact information of three referees, before **November 15th, 2020**, indicating the position number AP 20-03 to:

Director
Institut national de la recherche scientifique (INRS)
Centre Énergie Matériaux Télécommunications
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Montreal (Quebec, CANADA) H5A 1K6
concours@emt.inrs.ca

INRS is committed to employment equity and diversity.

INRS welcomes applications from women, visible minorities, ethnic minorities, indigenous people, and persons with disabilities.
Priority is given to Canadian citizens and residents.

¹As defined by the SSHRC: https://www.sshrc-crsh.gc.ca/funding-financement/instructions/index-eng.aspx?fid=ig_instr#cont4