COLLOQUE REPARTI WORKSHOP 2024
Systèmes cyberphysiques et intelligence machine matérialisée

Pavillon Alphonse-Desjardins Building
2325, rue de l'Université
Université Laval
Québec, Québec, G1V 0A6

21 mai 2024 – May 21, 2024

La session du matin aura lieu dans l’Espace Jardin. La session d’affiches aura lieu dans l’Atrium Jean-Guy Paquet.

The morning session will take place in the Espace Jardin. The poster session will take place in the Atrium Jean-Guy Paquet.

10h15 – 10h45  Inscription / Registration  (Espace Jardin : rez-de-chaussée / ground floor)
10h45 – 10h55  Mot de bienvenue / Opening remarks  (Espace Jardin)
                Clément Gosselin (Directeur de REPARTI / REPARTI Director)
11h00 – 12h00  Présentation invitée / Invited Talk  (Espace Jardin)
                Multifunctional robots, are we finally ready for them?
                Pascal Labrecque
                CEO et Co-fondateur de Sami Agtech, une entreprise oeuvrant dans la robotique agricole
                CEO and Co-founder of Sami Agtech, an Agricultural Robotics Company
                (Résumé et biographie, voir p. 2)
                (Abstract and biography, see p. 2)
12h00 – 13h15  Repas de midi / Lunch  (inclus / included)
                boîtes à lunch / lunch boxes  (Espace Jardin)
13h15 – 14h30  Session d’affiches / Poster Session  (Atrium Jean-Guy Paquet)
                (voir p. 3 / see p. 3)
14h30 – 14h45  Pavillon Alphonse-Desjardins → Pavillon Adrien-Pouliot
14h45 – 16h30  Visite des laboratoires - Lab Visits
                (Laboratoire de robotique, Laboratoire de Vision et Systèmes Numériques et
                Laboratoire de robotique boréale, Pavillon Adrien-Pouliot)
Présentation invitée / Invited Talk (Espace Jardin, Pavillon Desjardins)

Multifunctional robots, are we finally ready for them?

Pascal Labrecque
CEO and Co-founder of Sami Agtech, an Agricultural Robotics Company

Abstract:
We will delve into the current status of multi-purpose robots and the different variables that must be satisfied to favour their emergence. Using the SAMI robotic harvester as a case study we will explore why the agricultural sector might be ready for that long-awaited robotic revolution.

Bio:
Pascal’s mission is to use technology to raise our society’s quality of life. Holding a PhD in Mechanical Engineering from Université Laval, he also studied at La Polytechnique de Montréal and McGill University. During his doctoral years, he specialized in human-robot cooperation and worked for the CHU de Québec on the design of a robot used for cancer treatment. He co-founded Corstem, a company that developed cardiac imaging analysis software based on artificial intelligence. In early 2019, Corstem was successfully acquired by Circle Cardiovascular Imaging, a world-leading firm in cardiac imaging. Following the acquisition, Pascal managed the Business and Product Operations at Circle and took the role of advisor and investor in more than a dozen startups. In 2022, Circle was acquired by a Private Equity firm, and he then decided to jump back into the startup ecosystem and joined the Centech incubator as an Entrepreneur in Residence. In 2023, he co-founded Sami Agtech, a manufacturer of robotic agricultural equipment.
REPARTI, Thème 1 :
Captation, traitement et interprétation d’information physique
Sensing, processing and interpreting physical information

1. Palate tracking in ultrasound images
   Hana Ben Asker, Lucie Ménard, Walcyr Cardoso and Catherine Laporte

2. Extraction automatique en 3D de la surface du palais des images échographiques 3D de la cavité buccale
   Suzon Olory, Steven M. Lulich et Catherine Laporte

3. Guided Interpretable Facial Expression Recognition via Spatial Action Unit Cues
   Soufiane Belharbi, Marco Pedersoli, Alessandro Lameiras Koerich, Simon Bacon and Eric Granger

4. Automated Forest Regrowth Zone Photo-Interpretation: Deep Learning with Drone surveying
   Kamyar Nasiri, Philippe Giguère and François Pomerleau

5. Subject-Based Domain Adaptation for Facial Expression Recognition
   Muhammad Osama Zeeshan, Muhammad Haseeb Aslam, Soufiane Belharbi, Alessandro Lameiras Koerich, Marco Pedersoli, Simon Bacon and Eric Granger

6. Distilling Privileged Multimodal Information for Expression Recognition using Optimal Transport
   Muhammad Haseeb Aslam, Muhammad Osama Zeeshan, Soufiane Belharbi, Marco Pedersoli, Alessandro Koerich, Simon Bacon and Eric Granger

7. Terahertz super-resolution generative adversarial network (THz-SRGAN)
   Pengfei Zhu, Ziang Wei, Hai Zhang, Rubén Usamentiaga, Stefano Sfarra and Xavier Maldague

8. Détection de la déglutition et de la respiration à l’aide d’un microphone intra-auriculaire
   Elyes Ben Cheikh, Catherine Laporte, et Rachel Bouserhal

9. Proprioception Is All You Need: Terrain Classification for Boreal Forests
   Damien LaRocque, William Guimont-Martin, David-Alexandre Duclos, Philippe Giguère and Francois Pomerleau
10. 3D Mapping of Glacier Moulins: Challenges and lessons learned
William Dubois, Matěj Boxan, Johann Laconte and François Pomerleau

11. Comparing Motion Distortion Between Vehicle Field Deployments
Nicolas Samson, Dominic Baril, Julien Lépine and François Pomerleau

REPARTI, Thème 2 :
Dispositifs robotiques ou haptiques
Robotic and haptic devices

12. Log Loading Automation for Timber-Harvesting Industry
Elie Ayoub, Heshan Fernando, William Larrivée-Hardy, Nicolas Lemieux, Philippe Giguère and Inna Sharf

13. Simplifying Dynamic Models for Parallel Robots by Introducing Virtual Degrees of Freedom
Zhou Zhou and Clément Gosselin

14. Kinematic Analysis, Control, and Motion Planning of a Redundant (6+3)-DOF Hybrid Parallel Robot
Ramin Ghaedrahmati, Simon Foucault and Clement Gosselin