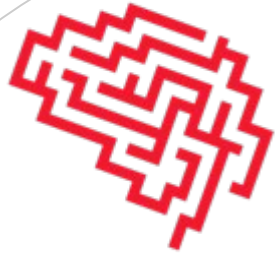


Welcome to

Bienvenue au

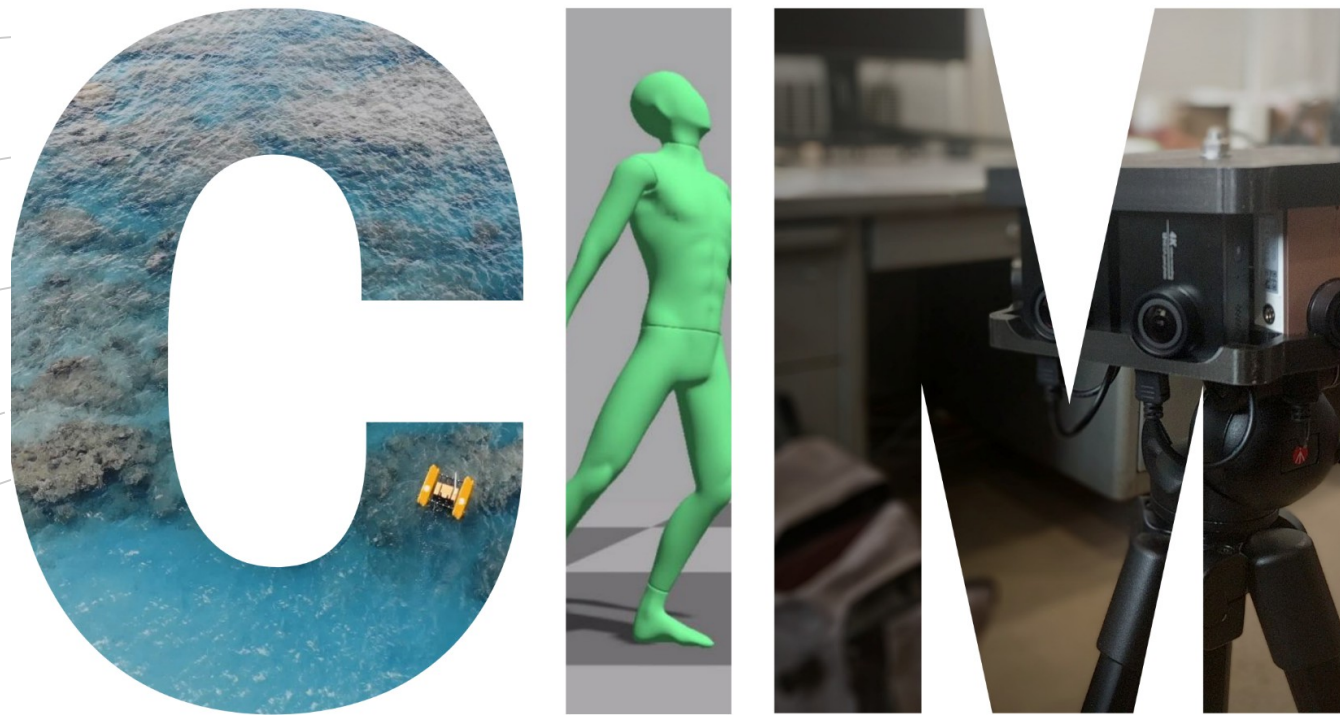


CIM

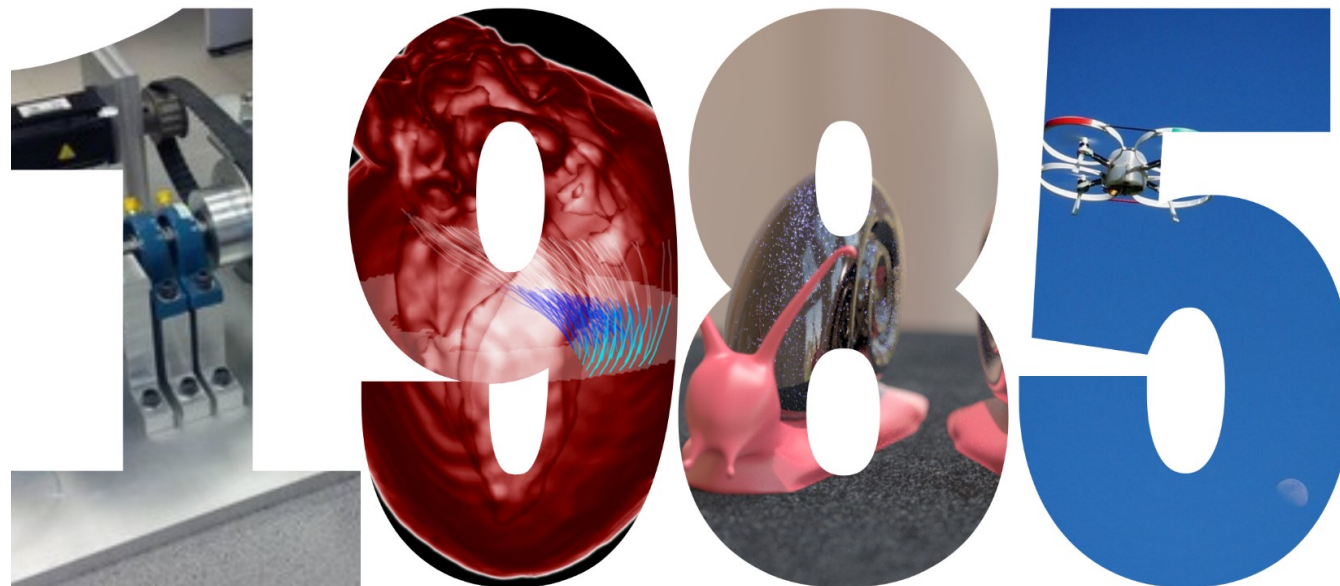
CENTRE FOR
INTELLIGENT
MACHINES

CENTRE DE RECHERCHE
SUR LES MACHINES
INTELLIGENTES

McGill University



SINCE / DEPUIS



About CIM

- A hub for robotics and intelligent systems, including artificial intelligence, computer vision, haptics, 3D graphics, systems and control
- National and international collaborations
- Cross-disciplinary community and legacy

CIM in a Nutshell

- Three departments across two faculties
 - School of Computer Science
 - Electrical and Computer Engineering
 - Mechanical Engineering
- 27 Full members and 16 Associate members
- 17 Research labs
- 200+ Peer-reviewed publications *per year*

Our Student Researchers

- 107 PhD researchers
- 105 Master's researchers
- 145 Undergraduate researchers
- 19 Post-doctoral fellows

Robotic Systems

OVERVIEW

- Development of autonomous and guided robots for varied tasks, human interaction, and multi-modal navigation

MEMBERS

- | | |
|-------------------------|---------------------|
| ■ Jorge Angeles*, ME | ■ Meyer Nahon, ME |
| ■ Gregory Dudek, CS | ■ Joelle Pineau, CS |
| ■ James Forbes, ME | ■ Audrey Sedal, ME |
| ■ Jozsef Kovecses, ME | ■ Inna Sharf, ME |
| ■ Hsiu-Chin Lin, ECE/CS | |
| ■ David Meger, CS | |
| ■ AJung Moon, ECE | |

Robotic Systems

Aerospace Mechatronics

INNA SHARF & MEYER NAHON



The McGill Aerospace Mechatronics Laboratory is dedicated to supporting research themes revolving around aeronautical and space systems, more specifically, Unmanned Aerial Vehicles (UAVs) and Space Robotic systems.

Robotic Systems

Applied Dynamics

JOZSEF KOVECSES



Our research group has a strong background and expertise in dynamics, robotics and haptics, solid mechanics, modelling and analysis, mechatronics and control, computational methods, and algorithms.

Robotic Systems

Mobile Robotics

GREGORY DUDEK, DAVE MEGER & HSIU-CHIN LIN



The key theme of our lab's research is sensor-based robotics, namely the use and understanding of sensor data through computer vision and machine learning, as well as decision-making under uncertainty.

Robotic Systems

MACRObotics

AUDREY SEDAL



Our research blends mechanical design, continuum mechanics, and machine learning to create robots that behave safely and with morphological intelligence.

Robotic Systems

DECAR

JAMES RICHARD FORBES



DECAR conducts fundamental and applied research on state estimation (navigation), guidance, and control. Problems in air, ground, marine, space, and manipulator robotics are of particular interest to the group.

Robotic Systems

Reasoning and Learning

JOELLE PINEAU



Current areas of interest include Markov processes, deep learning and its applications, reinforcement learning, natural language processing and computational linguistics.

Human- Computer Interaction

OVERVIEW

- The technological development and ethical study of novel interaction paradigms, connecting humans with a diversity of sensory interfaces

MEMBERS

- Jeremy Cooperstock, ECE
- Jozsef Kovecses, ME
- AJung Moon, ECE

Human-Computer Interaction

Shared Reality Lab

JEREMY COOPERSTOCK



The goal of Shared Reality is to achieve high-fidelity distributed interaction, with both real and virtual data, at levels of presence that support the most demanding applications, and to do so in spite of sensor and bandwidth limitations.

Human-Computer Interaction

RAISE Lab

AJUNG MOON



The RAISE lab is an interdisciplinary group that investigates the social and ethical implications of robots and AI systems and explores what it means for engineers to be designing and deploying such systems responsibly for a better, technological future.

Computer Graphics

OVERVIEW

- The development of mathematical models of real world dynamics, and numerical methods for synthesizing these visual phenomena for, e.g., games and visual effects

MEMBERS

- Derek Nowrouzezahrai, ECE
- Paul Kry, CS

Computer Graphics

Computer Animation

PAUL KRY

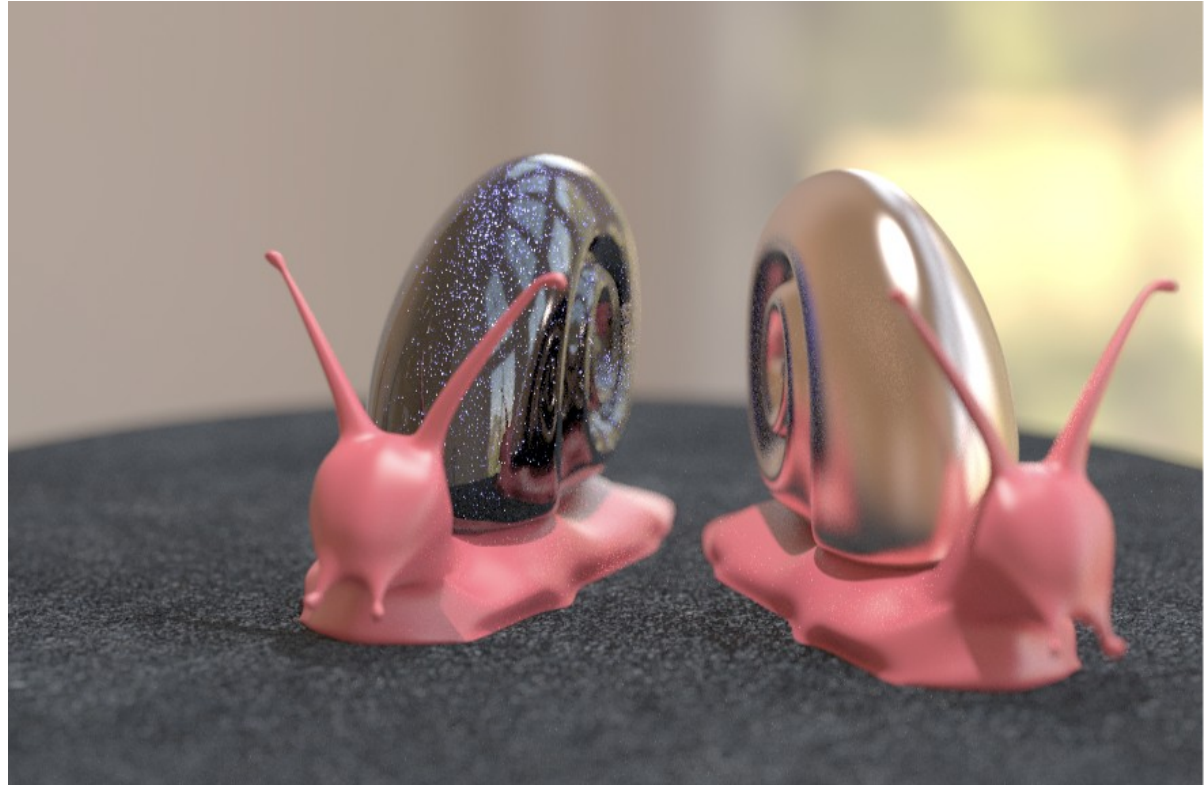


The computer graphics lab at McGill is concerned with problems in physically based animation, skin deformations of articulated characters, motion capture, interaction, and physically based modeling of humans and animals.

Computer Graphics

Graphics

DEREK NOWROUZEZAHRAI



We work on animation and rendering algorithms for video games and VR, physics-based models for visual effects in films, and applied machine learning

Computer Vision and Medical Image Analysis

OVERVIEW

- Development of automatic methods for understanding the structure of the real world from imaging sensors, e.g., in photographic and medical contexts

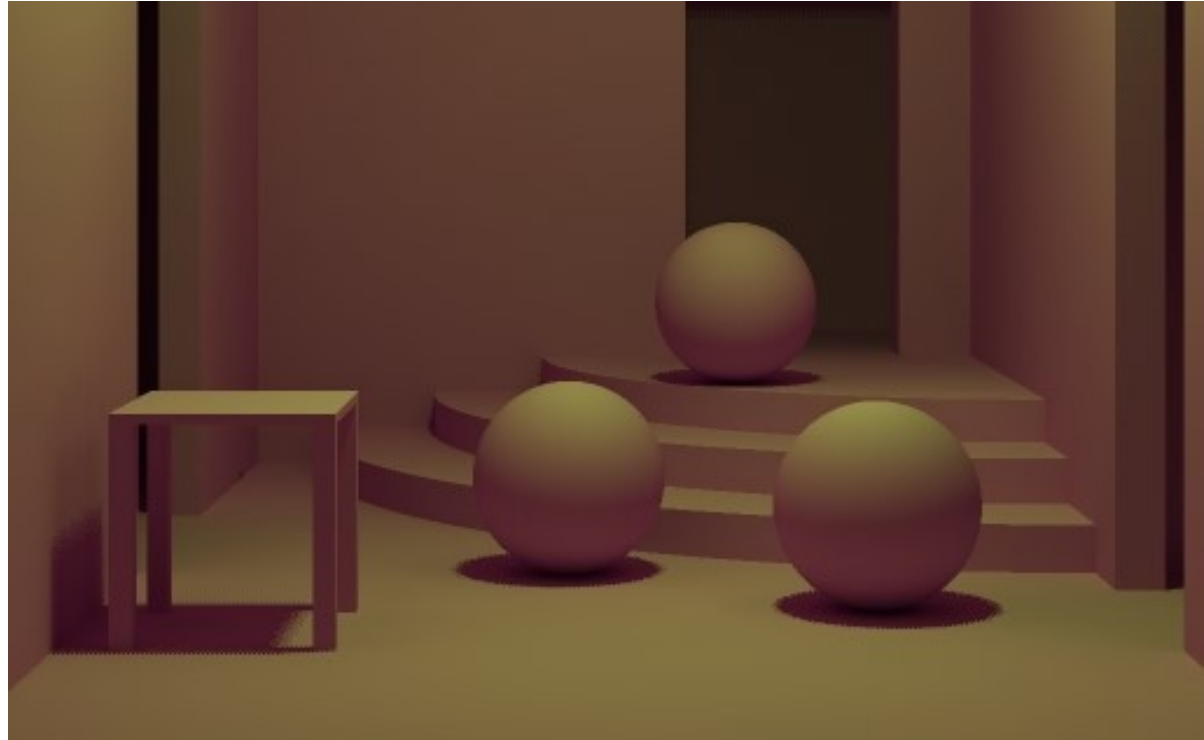
MEMBERS

- | | |
|----------------------|-----------------------|
| ■ Tal Arbel, ECE | ■ Michael Langer, CS |
| ■ James Clark, ECE | ■ Martin Levine*, ECE |
| ■ Frank Ferrie*, ECE | ■ Kaleem Siddiqi, CS |

Computer Vision

Appearance Modeling

MICHAEL LANGER



Research topics include applied perception in graphics, human vision and appearance models.

Computer Vision

Visual Motor Research

JAMES CLARK

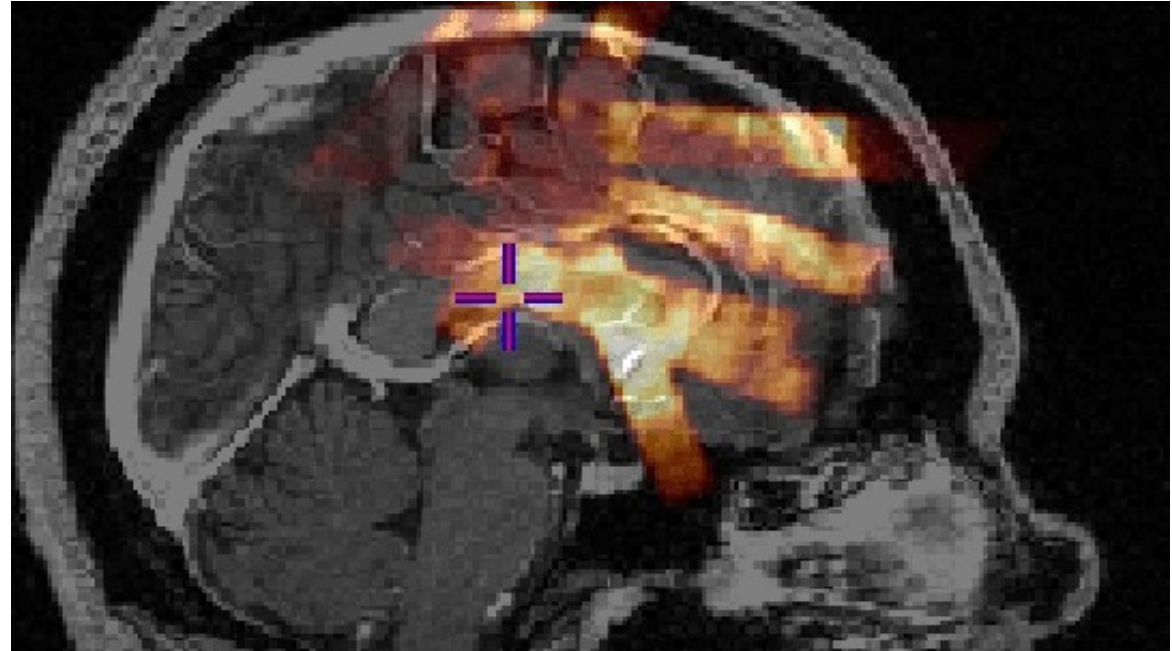


Current research interests include Attention Modeling and Tracking, Generation and Analysis of Cinematic Imagery, Spectral Modeling and Colour Vision, and Augmented Reality and Video Surveillance.

Medical Image Analysis

Probabilistic Vision

TAL ARBEL

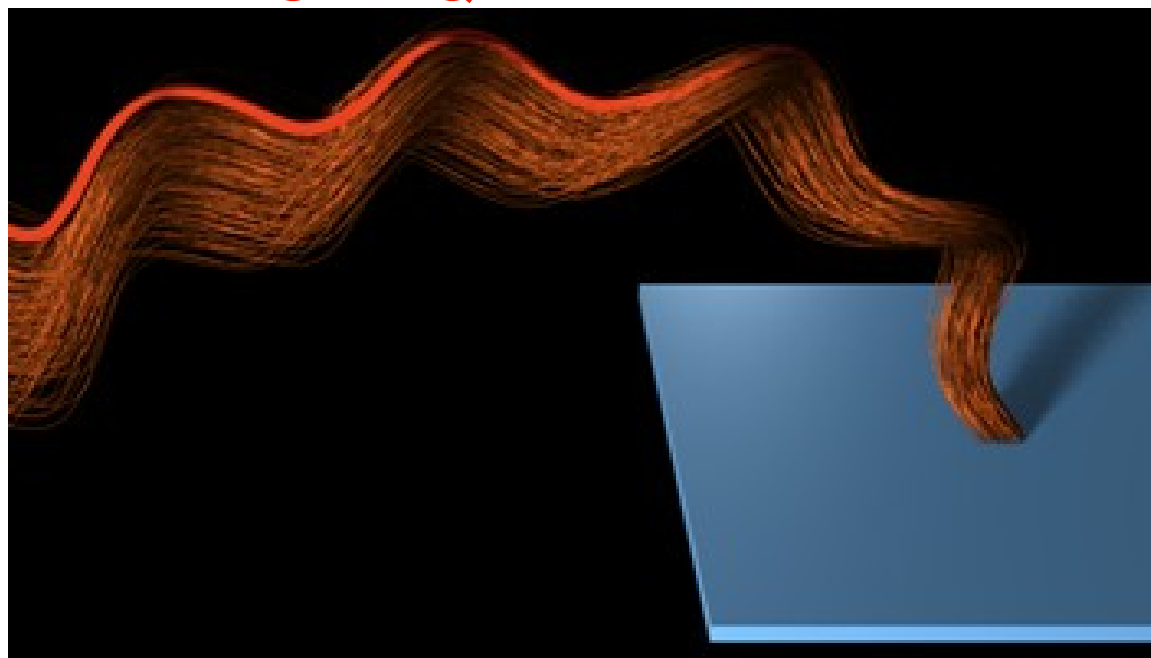


The focus of our research is on developing probabilistic machine learning and modern deep learning models for medical image analysis.

Medical Image Analysis

Shape Analysis

KALEEM SIDDIQI



Drawing on techniques from singularity theory, partial differential equations, geometric flows and graph theory, our group is broadly concerned with the problem of shape analysis in computational vision and medical imaging.

Systems & Control

OVERVIEW

- Studying real world systems to create predicative models and controls with applications in medical equipment and electric vehicles

MEMBERS

- Benoit Boulet, ECE
- Peter Caines, ECE
- Warren Gross, ECE
- Aditya Mahajan, ECE
- Arun Misra, ME
- Meyer Nahon, ME

Systems & Control

Intelligent Automation

BENOIT BOULET

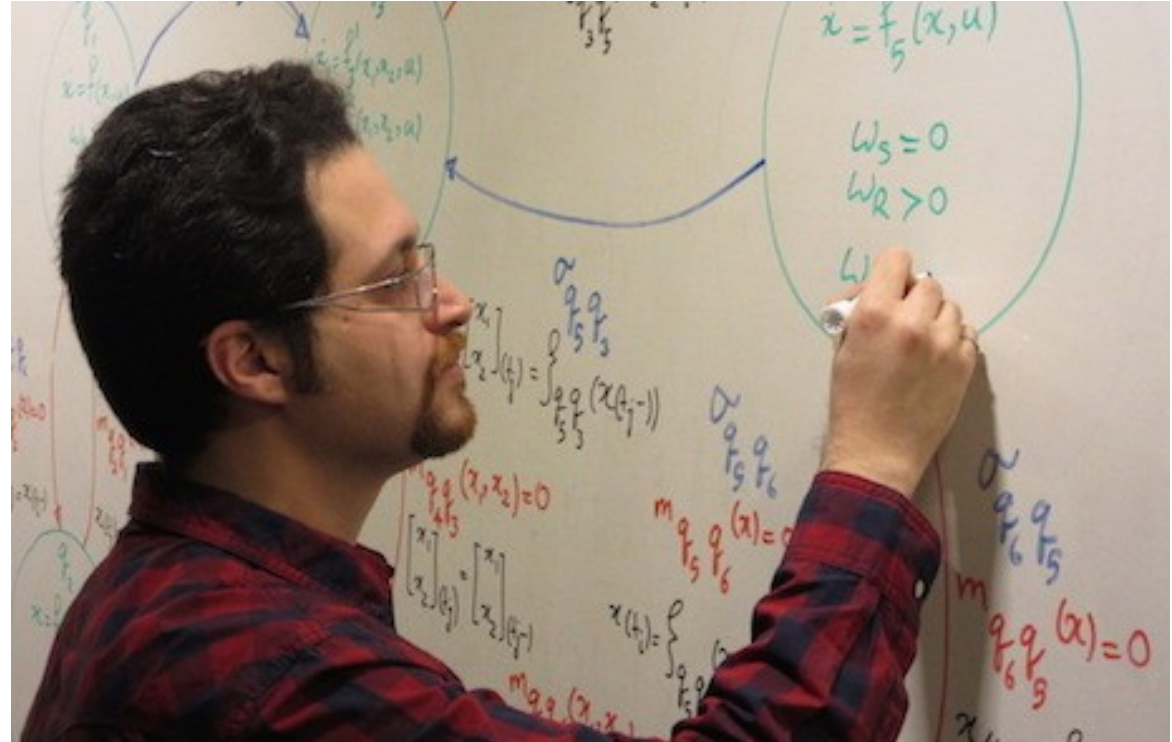


The Intelligent Automation Lab focuses on research and development of automation and machine learning solutions to enable novel environmentally sustainable systems.

Systems & Control

Systems and Control Group

PETER CAINES & ADITYA MAHAJAN

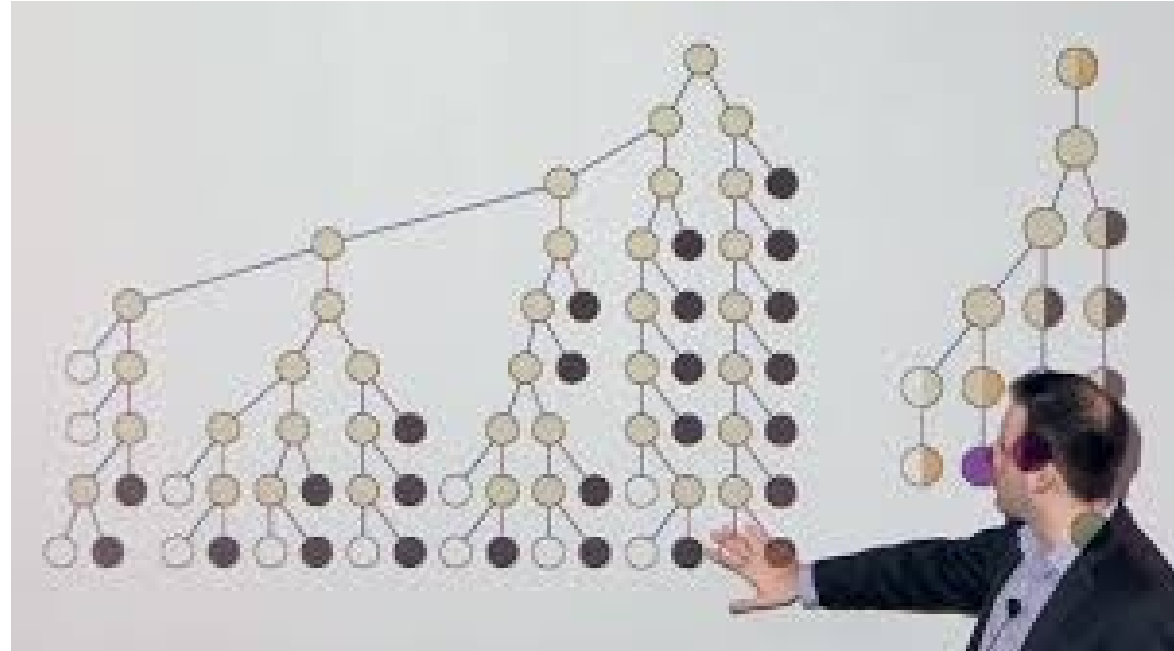


Research interests include decentralized stochastic control, team theory, reinforcement learning, multi-armed bandits and information theory.

Systems & Control

Integrated Systems for Information Processing

WARREN GROSS



His work focuses on efficient deep learning models, hardware for machine learning, stochastic computing, hardware-aware design-space exploration for neural networks, machine learning for digital communications, and efficient decoding algorithms and hardware for error-correcting codes.

Admin Staff

- Marlene Gray,
CIM Manager



- Chelsea Rogers,
Communications
Associate



IT Staff

- Olivier St-Martin Cormier, Systems Manager

- Nick Wilson, Systems Administrator



CIM Facilities & Community



■ CONFERENCE
ROOM MC 437



■ MEETING ROOM
MC 409



■ IT SERVICES



■ STUDENT EVENTS



■ INDUSTRIAL LIAISON
PROGRAM

Resources & Contacts

★ Visit the CIM Wiki!
<https://wiki.cim.mcgill.ca/>

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