ARTIFICIAL INTELLIGENCE

SOME OF OUR CUTTING-EDGE FACILITIES AND RESEARCH GROUPS:

- Network Management and Artificial Intelligence (NMAI) Laboratory
- Robotics Laboratory
- Advanced Real-Time Simulation Laboratory
- Haptics and Teleoperation Laboratory
- Nortel Advanced Software Engineering Research and Teaching (ASERT)
- The Integrated Systems Inc (ISI) Laboratory
- Complex Adaptive Systems Group
- March Networks, Mitel Networks and Analog Devices Inc. (ADI) VoIP Lab
- The Audio Signal Processing Lab
- Broadband Networks Laboratory
- Optical Networks Laboratory
- Texas Instruments Embedded Processing Lab
- Intelligent Information Systems and Data Analytics (IISDA) Research Group
- The Institute for Data Science
- Jo Wong Extraterrestrial Robotics Lab

INTRO:

Computer systems are increasingly capable of performing tasks once considered the sole domain of human intelligence. Machines can translate language, recognize speech, interpret complex data, make intelligent decisions, and increasingly, learn and problem solve. Here at Carleton University, we are applying artificial intelligence and machine learning theory to real-world problems, and developing the technologies and procedures of tomorrow – from robotic surgery, to autonomous space exploration, to intelligent information systems, homes, and vehicles.

SOME OF OUR DISTINGUISHED FACULTY:

- Yuhong Guo is a Canada Research Chair in Machine Learning. She served as an area chair or senior program committee member for the International Conference on Joint Artificial Intelligence (IJCAI) and the AAAI Conference on Artificial Intelligence (AAAI), and was on the program committees for many others. She also co-chaired two workshops on representation learning at the Advances in Neural Information Processing Systems (NIPS) and two workshops on heterogeneous learning at the Siam International Conference on Data Mining (SDM). Her areas of interest include machine learning, artificial intelligence, natural language processing, computer vision, and bioinformatics.
- Peter Liu is a former Canada Research Chair in Interactive Network Computer and Tele-Operation. He is an associate editor for the International Journal of Robotics and Automation, the Journal of Intelligent Service Robotics, and Control and Intelligent Systems. He has served in a number of IEEE positions relating to intelligent control, automation, and advanced intelligent mechatronics. His research interests include: network-based tele-operation and tele-robotics; context-aware networks, robotic surgery; surgical simulation; wireless sensor networks; and robots and intelligent systems.

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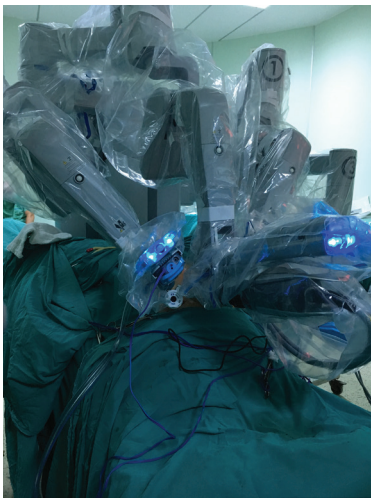

- Leopoldo Bertossi has been a Faculty Fellow of the IBM Center for Advanced Studies, was the theme leader for "Data Quality and Data Cleaning" of the NSERC Strategic Network for Data Management for Business Intelligence, and has been a visiting researcher at several international technical universities. His research interests include: data science; data management for business intelligence; statistical relational learning; knowledge representation in AI; computational logic; machine learning; and intelligent information systems.
- Ana-Maria Cretu is the author of more than 90 technical papers. She serves as Technical Committee Member for several international conferences, as conference organizer and as a reviewer for several Journals and Transactions. She is an Associate Editor for the Springer Journal of Soft Computing, a Senior Member of the IEEE, a Member of the Instrumentation and Measurement Society, of the IEEE Computational Intelligence Society, and of the IEEE Systems, Man and Cybernetics Society. Her research interests include: machine intelligence; machine learning, neural networks, biologically-inspired models; computational intelligence techniques for complex data and image processing; natural human-machine interaction; multimodal sensor systems for multisensory data acquisition; 3D deformable object acquisition, modeling and manipulation in virtualized reality environments; selective and attention-based sensing and modeling; and data mining.
- Babak Esfandiari's research interests include: agent-based systems; network computing; object-oriented design and languages; network management and supervision; symbolic machine learning; applications of artificial intelligence; case-based reasoning.
- Alex Ellery is a former Canada Research Chair in Space Robotics and Space Technology and the director of the Jo Wong Extraterrestrial Robotics Lab. His field of applied robotics draws inspiration from biological and evolutionary theory, and seeks to achieve greater autonomy, robustness and adaptability in space and planetary robotic systems.
- B. John Oomen is a Chancellor's Professor, Fellow of the IEEE, Fellow of the IAPR (International Association of Pattern Recognition), and has over 460 publications. His research interests include: learning systems; statistical pattern recognition; robotics; adaptive data structures; artificial neural networks, and more.
- James Green came to Carleton from a bioinformatics start-up company, where he helped develop novel analysis methods for the interpretation of gene expression data. He is a Senior Member of the IEEE. His research revolves around pattern classification challenges in biomedical informatics, particularly in the presence of class imbalance. His current projects include: the prediction of protein structure, function and interaction; unobtrusive patient monitoring; the identification of microRNA in unique species; the design of novel assistive devices; and the acceleration of scientific computing using parallel architectures.
- Tony White is a member of the Complex Adaptive Systems group, whose work has resulted in patents currently held my Ottawa high technology companies. His research interests include: artificial intelligence, social computing, information systems, distributed computing, internet applications and web technologies, machine learning, mobile agents, peer-to-peer computing, swarm intelligence, and evolutionary computing.

PROJECTS AND PARTNERSHIPS:

The artificial intelligence and machine learning groups have well-established ties with the federal and provincial governments, industry partners, and research institutions. Our researchers have collaborated with a number of partners, including Cisco, Shopify, Telus, Huawei, IBM, Intel, Blackberry QNX, Texas Instruments, Alcatel, Mitel, Mindbridge, AI, Cienna, Clearwater Clinical, Ericsson, Cisco, The European Space Agency, the Canadian Space Agency, Defense Research and Development Canada, NSERC, MITACS, Innovation, Science and Economic Development Canada, and more.

To find out more, contact:
Sandra Crocker
Associate Vice-President (Strategic Initiatives and Operations)
Industry and Partnership Services at Carleton University
@ sandra.crocker@carleton.ca
613-520-2600 ext. 3570
carleton.ca/ips

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BIG DATA

OUR DATA SCIENCE RESEARCH GROUPS/AREAS OF FOCUS:

- Health and Biomedical Informatics
- Social Science and Digital Humanities
- Geomatics, Climate Monitoring and Remote Sensing
- Marketing and IT for Business
- Computer Science and Parallel Computing
- Medical Physics and Particle Physics
- Engineering, Modelling and Simulation
- Real Time and Distributed Systems

INTRO:

Over 130 professors across campus are working on some aspect of data science and analytics. Our university is home to the Institute for Data Science, a cross-departmental initiative supporting interdisciplinary research and collaboration among varied fields, including: architecture; biology; civil and environmental engineering; communication; computer science; economics; geography and environmental studies; health sciences; information technology; mathematics and statistics; business; and systems and computer engineering. Our faculty are world experts in multiple aspects of data science and analytics, working together to solve real world problems.

SOME OF OUR MULTIDISCIPLINARY DATA SCIENCE EXPERTS:

- Computer Scientist Frank Dehne is a Chancellor's Professor and the Director of the Carleton Institute for Data Science. His research program focuses on improving the performance of big data analytics systems through efficient parallel computing methods for multi-core processors, Graphics Processing Units (GPUs), processor clusters, and clouds for business intelligence and computational biochemistry.
- Shikharesh Majumdar is a Professor of Systems and Computer Engineering and the Director of the Real Time and Distributed Systems Research Centre at Carleton. He specializes in Information and Communications Technology and is researching platforms and techniques for processing big data and finding ways to analyze it more quickly and efficiently on clusters and clouds. His research includes resource management techniques for both batch and streaming data analytics for IoT based smart systems.

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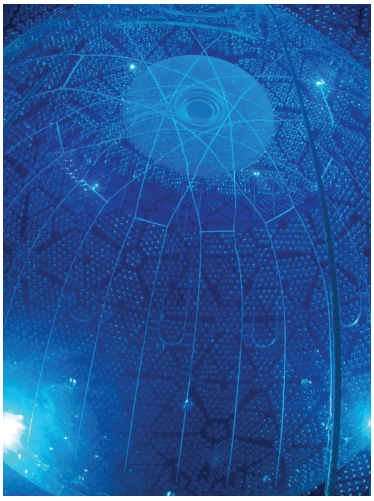

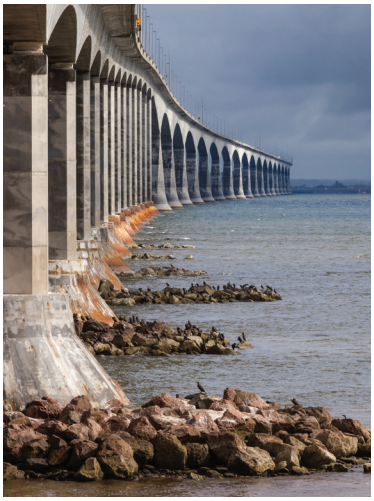

- Biologist Lenore Fahrig is a Fellow of the Royal Society of Canada, co-director of the Geomatics and Landscape Ecology Research Laboratory, and a world leader in conservation research. She and her team apply data science to better understanding habitat connectivity and fragmentation, with a particular focus on the effect of roads and traffic on wildlife populations.
- Systems and computer engineer James Green came to Carleton from a bioinformatics start-up company, where he helped develop novel analysis methods for the interpretation of gene expression data. He is a Senior Member of the IEEE. His research revolves around pattern classification challenges in biomedical informatics, particularly in the presence of class imbalance. His current projects include: the prediction of protein structure, function and interaction; unobtrusive patient monitoring; the identification of microRNA in unique species; the design of novel assistive devices; and the acceleration of scientific computing using parallel architectures.
- Journalism and Communication Professor Tracey Lauriault is a research associate with the Programmable City Project, and initiative funded by the European Research Council and based at the National Institute of Regional and Spatial Analysis at Maynooth University, Ireland. Her areas of expertise include: critical data studies; small, big and spatial data policy; data infrastructures; preservation and archiving of data; and open data, open government, and crowdsourcing.
- Geographer Stephan Gruber is the Canada Research Chair in Climate Change Impacts/Adaptation in Northern Canada. His research applies data science to better anticipating and quantifying the impacts that local human activity and global climate change have on geohazards and natural systems, with a strong emphasis on quantifying permafrost thaw.

SOME OF OUR BIG DATA-RELATED FACILITIES INCLUDE:

- Biomedical Engineering Laboratory
- Advanced Real-Time Simulation Laboratory
- Radio Communications Laboratory
- Carleton University Biomedical Engineering (CUBE) Research Laboratory
- Mobile Computing Laboratory
- Software Quality Engineering Laboratory (SQUALL)
- Real Time and Distributed Systems (RADS) Lab
- Network Management and Artificial Intelligence Lab
- Integrated Systems Inc. (ISI) Laboratory
- March Networks, Mitel Networks and Analog Devices Inc. (ADI) VoIP Lab
- Audio Signal Processing Lab
- Texas Instruments Embedded Processing Lab
- Broadband Networks Laboratory
- Optical Networks Laboratory
- Centre for Qualitative Analysis and Decision Support

PROJECTS AND PARTNERSHIPS:

Carleton University has established strong ties the federal and provincial governments, industry partners, research institutions, and international agencies. Our researchers have collaborated with the Ontario Centres of Excellence, the Institute of Electrical and Electronics Engineers (IEEE), the Association for Computing Machinery (ACM), Environment and Climate Change Canada, NSERC, MITACS, the Ontario Research Fund, the Canada Foundation for Innovation, the Canadian Advanced Technology Alliance, Thomson Reuters, You.I TV, First Derivatives, IMRSV Data Labs, MindBridge, AI, Clearwater Clinical, IBM, Shopify, Invest Ottawa, the Ontario Centres of Excellence, and other industry partners. Carleton is also host to Data Day, the annual conference celebrating the latest developments in data science and analytics research, which attracts hundreds of public, private and academic sector data enthusiasts every year.

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🌐 carleton.ca/ips

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CYBERSECURITY

SOME OF OUR CUTTING-EDGE FACILITIES AND RESEARCH GROUPS:

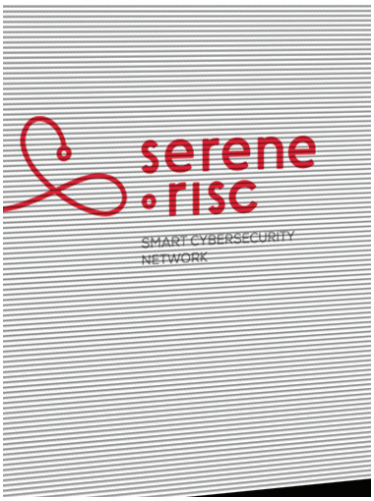
- Carleton Human-Oriented Research in Usable Security (CHORUS) Laboratory
- Carleton Computer Security Lab (CCSL)
- Complex Adaptive Systems Group
- HotSoft Research Group (HotSoft)
- Global Cybersecurity Resource Program
- Next Generation Networks (NGN) Research Group
- Sensor Systems and the Internet of Things Laboratory

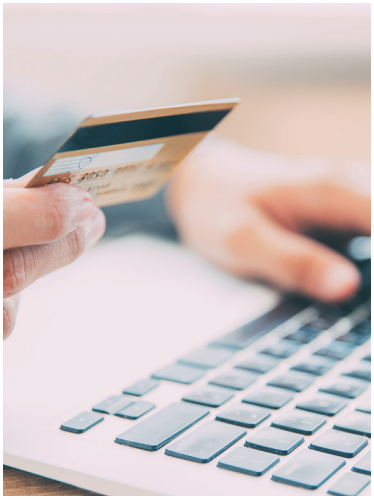
INTRO:

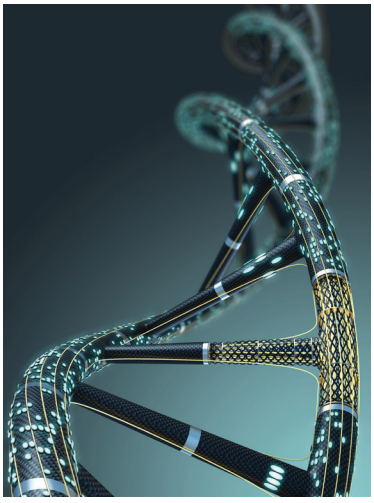
Computer and Internet security has become a critical issue in society because of the vulnerability of our computing and communication networks to hackers and malicious software such as viruses and worms. Here at Carleton University, our researchers are examining every aspect of information systems security, including computer and network security, human-computer interaction, cryptography and software security. Members of our faculty led with the pan-Canadian NSERC Internetworked Systems Security Network (ISSNet) Initiative from 2007 to 2013, and our university is a founding member of the Global EPIC (Ecosystems Partnership in Innovation and Cybersecurity) Network – a partnership of 14 organizations from ten countries. About 40 members of our faculty, alumni and current students are taking the fight against cyber attackers to a new level at the cutting-edge Global Cybersecurity Resource Program, part of the new Innovation Centre at Bayview Yards. We're working with partners in every sector to make the everyday technologies of the future safe, secure, tamper-proof, and commercially-relevant.

SOME OF OUR DISTINGUISHED FACULTY:

- Sonia Chiasson is the Canada Research Chair in Human-Oriented Computer Security. She serves as Deputy Scientific Director of SERENE-RISC, a national network created to help protect individuals and organizations from online security and privacy threats and has participated in a number of federal projects and strategic initiatives. Dr. Chiasson's research interests relate to the human aspects of computer security and privacy with the goal of making security mechanisms easier and safer for people to use.







- Paul Van Oorschot is the Canada Research Chair in Authentication and Computer Security. He is a Fellow of the Royal Society of Canada, served as Scientific Director and Principal Investigator at NSERC ISSNet for five years, and the Handbook of Applied Cryptography he co-authored is regarded as the standard reference for engineers and applied researchers in the field. His research aims to advance the understanding of authentication technologies and design better software mechanisms, including user identity management, authentication infrastructure for computer use, and security for mobile devices.
- Ashraf Matrawy leads the Next Generation Networks research group at Carleton. He is a senior member of the IEEE and a Network co-Investigator of the Smart Cybersecurity Network (SERENE-RISC). His research interests include reliable and secure computer networking with emphasis on virtualized infrastructures, software defined networking and secure routing in IoT. Prof. Matrawy is also a licensed Professional Engineer in Ontario. His professional experience include serving as a consultant for industry and for federal government departments.
- Jason Jaskolka is a member of the ACM and IEEE. Before coming to Carleton, he was a U.S. Department of Homeland Security Cybersecurity Postdoctoral Scholar at Stanford University. His research involves the formal specification, modelling, analysis, and verification of distributed multi-agent systems, with the goal of developing design patterns that can be applied to build cybersecurity into the designs of such systems. He also works on developing cybersecurity assurance solutions for a broad range of cyber-dependent systems and networks.
- Anil Somayaji is Associate Director of the Carleton Computer Security Lab. He harnesses his background in biology to work on ways of improving computer security: his early work focused intently on the human immune system's defense mechanisms and how these biological qualities could be replicated to improve computer software. His areas of focus are computer security, intrusion detection, operating systems, artificial life, and complex adaptive systems.
- Robert Biddle is Professor of Human-Computer Interaction in Carleton's School of Computer Science. His research covers both human and technical aspects of the design interactive computer systems. His current research work is on usable computer security, human aspects of computer games and hyper-media, and collaborative software development processes.

PROJECTS AND PARTNERSHIPS:

Carleton University has established strong ties with the federal and provincial governments, industry partners, and research institutions. Our researchers have collaborated with a number of partners in fields relating to cybersecurity, including NSERC ISSNet, Public Safety Canada, the Office of the Privacy Commissioner of Canada, the Canada Foundation for Innovation, the Ontario Ministry of Innovation, Science and Economic Development, CA Computer Associates, Blackberry, IBM, Telus, Trend Micro, Bell Canada, Microsoft Research, Alcatel-Lucent Canada, Solana Networks, and others.

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AUTONOMOUS VEHICLES

STATE-OF-THE-ART FACILITIES:

- Photonics and Sensor Lab
- UAV and MAV Lab
- Enterprise Cloud Systems Lab
- Radio Communications Lab
- Embedded Multi-sensor Systems (EMS) Lab
- Mobile Computing Lab
- Real-Time and Distributed Systems Lab
- Advanced Cognitive Engineering Lab
- Autonomous Space Robotics and Mechatronics Laboratory
- Sensor Systems and IoT Lab
- Computational Geometry Lab
- Complex Adaptive Systems Group
- Carleton Computer Security Lab
- JY Wong Lab for Terrestrial and Extraterrestrial Mobility, Guidance and Control

INTRO:

Carleton University is actively involved in autonomous vehicle technology, with over 100 researchers from four faculties and 13 university departments, schools and institutes engaged in a broad spectrum of research, with applications as far-ranging as cognitive science, sensor networks, robotics, machine learning and artificial intelligence, unmanned vehicles, accurate algorithm predications, computer security and wireless-based systems. Our researchers are working to make the transportation of the future safer, more sustainable, more secure, and more efficient.

SOME OF OUR DISTINGUISHED RESEARCHERS:

- Halim Yanikomeroglu's research is focused on customization and adaptation of state-of-the-art 5G wireless networks, multihop relaying and cooperative communications for connected vehicles.
- Richard Yu's research is focused on addressing existing research challenges to make innovative 5G wireless networks more efficient and effective relative to autonomous systems.
- Yuhong Guo is Carleton's Canada Research Chair in Machine Learning. Her areas of focus include artificial intelligence, decision making, natural language processing, computer vision and big data analysis.
- Mohamed Atia is a member of the Institute of Navigation (ION) and the founder of the Embedded Multi-Sensor Systems (EMS) Lab at Carleton. Automotive navigation is only one of the EMS Lab's research areas. Other areas of expertise include Unmanned Aerial Vehicles (UAVs), indoor navigation using inertial sensors and an Attitude and Heading Reference System (AHRS), a 3D-orientation calculation system used in a wide range of robotic and navigation platforms.

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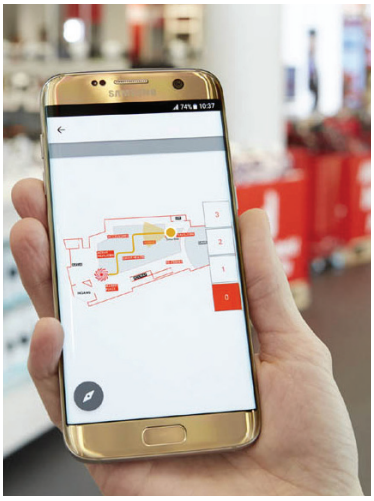

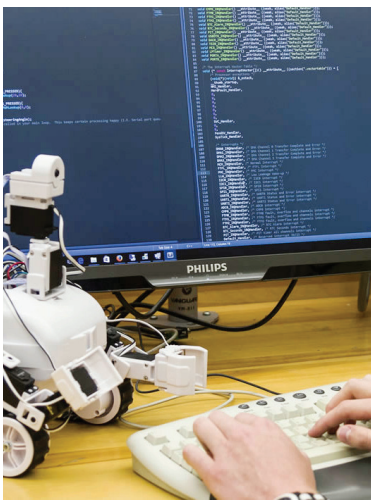

- Chris Joslin's research is in the area of video and audio compression, and adaptation methods for network systems in order to reduce network load for collaboration and permit collaborative virtual environments to be expanded by users. His core research topics are 3D computer graphics and animation, biomedical engineering, and signal processing and compression – and these core elements remain integral to his more recent research developing automotive displays and user interfaces for automobiles that drastically reduce driver distraction.
- Rony Amaya's research interests include adaptive integrated active antennas and filters; active, switchable and tunable engineered surfaces; GaN/GaAs/Si based reconfigurable MMICs; System-On-Package (SOP) integration; miniaturized integrated sensors; high efficiency RF Wireless Power Transfer (WPT) and energy scavenging; capacitive and inductive contactless communications; high power integrated electronics; and galvanic isolation for high voltage electronic systems. The applications of his research in electronics include intelligent, reconfigurable wireless systems with spectrum awareness and interference mitigation; 5G wireless systems; robust navigation and communication systems for UAVs; wireless long-range telemetry and power charging for next generation RFIDs and IoTs; high efficiency, high power electronics for aerospace and automotive applications; and more.
- Sreeraman Rajan is Carleton's Canada Research Chair in Sensor Systems and the Chair of IEEE Canada Area East. He came to Carleton from Defense Research and Development Canada. His areas of interest include: sensors and sensor systems (biomedical, defense and security applications); compressive sensing; signal processing (including biomedical, statistical and adaptive); machine learning; and pattern classification.

PROJECTS AND PARTNERSHIPS:

Carleton University has established strong ties to the federal and provincial governments, industry partners, and research institutions. Our researchers have collaborated with a number of corporate partners in the fields related to autonomous vehicle technology, including:

- Arnprior Aerospace Inc.
- Bell Helicopter
- Blackberry and QNX Software Systems
- Bombardier
- Ciena
- Cisco
- Contextere
- Eion Wireless
- Ericsson
- Esterline Technologies
- GasTOPS
- General Dynamics
- Huawei
- Kongsberg
- Lockheed Martin
- MDA
- Marinvent
- Neptec
- Nokia

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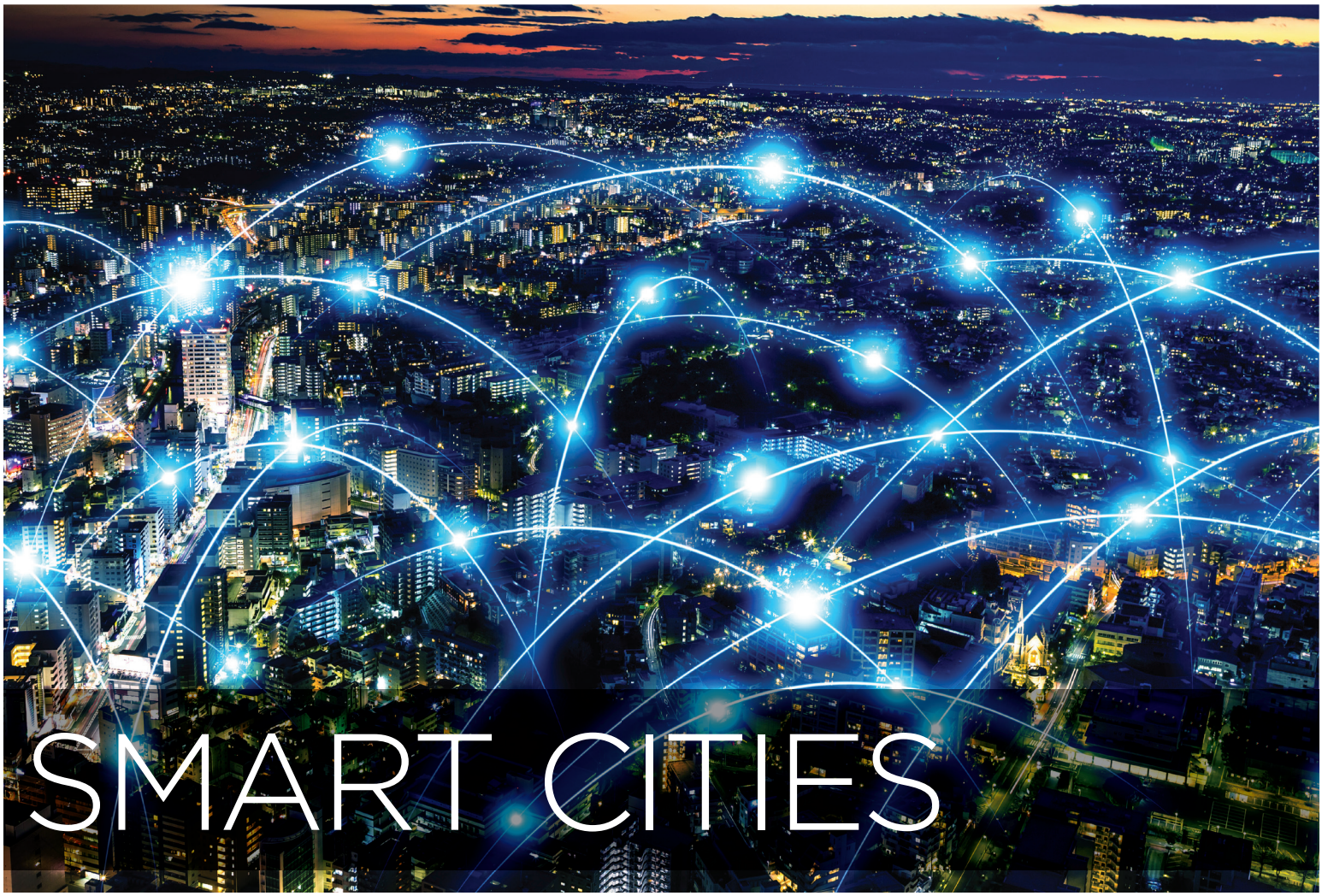

SMART CITIES

A FEW OF OUR FACILITIES AND RESEARCH CENTRES RELATING TO SMART CITIES:

- Carleton Laboratory for Laser-Induced Photonic Structures (CLLIPS)
- Sensor Systems and the Internet of Things (IoT) Laboratory
- Carleton Sustainable Energy Research Centre
- Real Time and Distributed Systems (RADS) Research Centre
- Advanced Cognitive Engineering (ACE) Lab
- Language and Brain Lab
- Neurocognitive Imaging Lab
- Carleton University Bioinformatics Group
- Urbandale Centre for Home Energy Research
- Building Performance Research Centre (BPRC)
- Human-Building Interaction (HBI) Laboratory/Delta Controls Laboratory
- Center for Research on Integrated Sensors Platforms (CRISP)

INTRO:

Carleton University is actively involved in various areas of research relating to the development of smart cities, including sensor technology, cloud computing, networking, wireless connectivity, artificial intelligence and machine learning, autonomous technologies, and cybersecurity. Together, our researchers are helping build the intelligent, connected, environmentally-friendly and efficient cities of the future.

SOME OF OUR DISTINGUISHED FACULTY:

- Mohamed Ibnkahla is the NSERC/Cisco Industrial Research Chair in Sensor Networks for the Internet of Things (IoT) and the Director of the Sensor Systems and Internet of Things Laboratory at Carleton University. His main research interests include designing and deploying IoT systems targeting various application areas such as renewable energies and smart grids, water management, healthcare, environmental monitoring, food traceability, intelligent transportation systems, precision gardening and agriculture, public safety and security, and smart cities.
- Sreeraman Rajan is the Canada Research Chair in Sensor Systems and the Chair of IEEE Canada Area East (previously Chair of the Ottawa Section.) He came to Carleton from Defense Research and Development Canada. His areas of interest include: sensors and sensor systems (biomedical, defense and security applications); compressive sensing; signal processing (including biomedical, statistical and adaptive); machine learning; and pattern classification.

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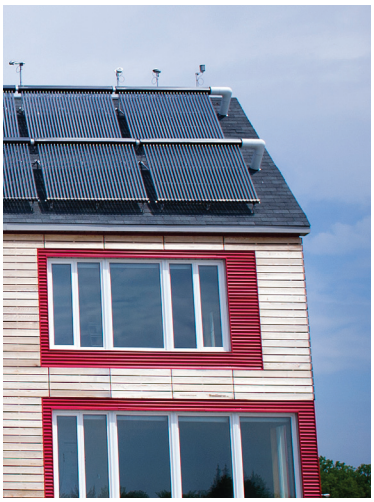

- Yuhong Guo is the Canada Research Chair in Machine Learning. She co-chaired the Siam International Conference on Data Mining (SDM) and the Conference on Neural Information Processing Systems (NIPS), was a committee member for many others, and has done journal review for half a dozen international journals on machine learning, computer vision, pattern analysis, computational biology and bioinformatics, and neural networks. Her areas of interest include: machine learning, artificial intelligence, natural language processing, computer vision, bioinformatics, and data analysis.
- Liam O'Brien is the Principal Investigator at Carleton's Human-Building Interaction Lab, which seeks to understand and influence building design to maximize comfort and minimize environmental impacts using multidisciplinary engineering-based, simulation, experimental and field-study approaches. His research interests include: design for building occupants and behaviour; smart buildings and big data; building simulation, design and data visualization; high-performance solar buildings; building automation systems; daylighting and solar control; urban form and solar energy access; and facilities management.
- Richard Yu is a fellow of the IEEE, and his innovative research in information and communications technology has led to significant product innovations – he holds 27 international patents in the field of wireless systems, and he and his team have been responsible for several cutting-edge breakthroughs in the industry. His research interests include: connected and autonomous vehicles; blockchain and distributed ledger technology; wireless cyber-physical systems; security and privacy in networks; and machine learning and artificial intelligence.
- Shikharesh Majumdar is a Professor and Director of the Real Time and Distributed Systems Research Centre at Carleton University. He is a member of the Association of Professional Engineers of Ontario, the ACM, and a senior member of the IEEE, by whom he has been awarded several distinctions, including a Distinguished Visitorship for the IEEE Computer Society. His research interests include: parallel and distributed systems; performance modelling and evaluation of computer systems; cloud computing; smart systems and the internet of things; middleware; resource management on clouds and grids; resource management on Big Data platforms; and resource management on wireless sensor networks.

PROJECTS AND PARTNERSHIPS:

Carleton University has established strong ties with the federal and provincial governments, industry partners, and research institutions. Our researchers have collaborated with a number of partners in the fields related to smart cities, including NSERC, CANARIE, Defense Research and Development Canada (DRDC), the Canadian Foundation for Innovation, the Ministry of Research and Innovation, the European Advanced Communications Technologies and Services (ACTS) Program, Ontario Research Fund (ORF), the Telecommunications Research Institute of Ontario (now Ontario Centres of Excellence), Communications Research Centre (CRC) Canada, College of Family Physicians Canada (CFPC), Ottawa Heart Institute, the Canadian Institute for Photonic Innovation, Research in Motion Inc., IBM, TeraXion (now Ciena), Cisco, SNC-Lavalin, Eion, Huawei Inc., Biopeak Inc., Nokia, Cistech, Telus, Alcatel-Lucent, and others.

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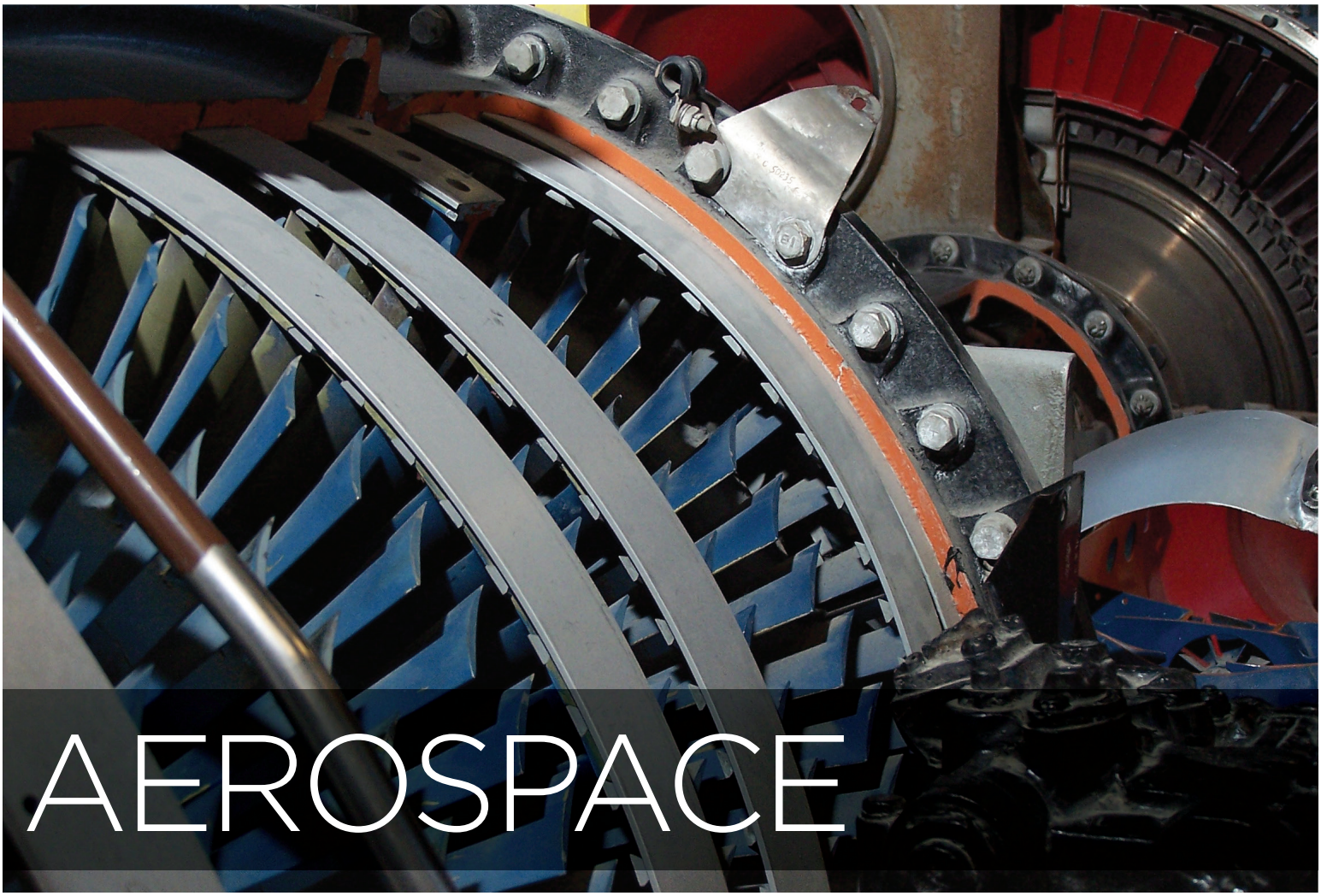


AEROSPACE

MAJOR FOCUS AREAS:

- Intelligent Aircraft Systems and Avionics
- Unmanned Aerial Vehicles (UAVs)
- Flight Simulation & Human Factors Research
- Rotorcraft Research
- Space Robotics & Systems Research
- Advanced Propulsion Systems
- Structures, Materials and Manufacturing
- Advanced Aerodynamics and Aeroacoustics

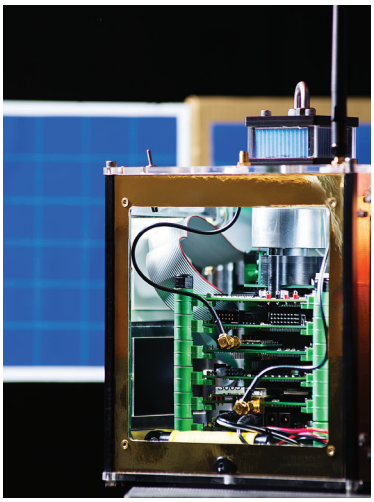
INTRO:

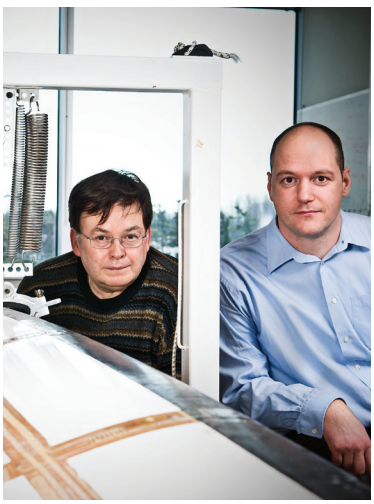
Carleton University is recognized internationally as a leader in aeronautics and space research, with renowned achievements and firsts in the fields of aerospace and aeronautics. With over 30 award-winning faculty members, and a wide range of unique, state-of-the-art facilities, the breadth and depth of the research expertise at Carleton Aerospace is extraordinary.

SOME OF OUR DISTINGUISHED RESEARCHERS:

- Jacques Albert is the Canada Research Chair in Advanced Photonic Components. He recently developed an Optical Fiber-Optic Sensor System for Aerospace Applications.
- Alex Ellery is a former Canada Research Chair in Robotics and Space Technology. His recent research is focused on the development of greater autonomy, robustness and adaptability of space and planetary robotic systems.
- Jason Etele was awarded a JSPS Long Term Fellowship and is a visiting researcher at the Japanese Aerospace eXploration Agency (JAXA) and the Kakuda Space Center. He specializes in rocket-based combined cycle engines, UAV analysis and simulation, launch systems, aerodynamics and flight mechanics.
- Mojtaba Ahmadi previously served as senior engineer and manager in industry, and as a researcher at NRC before coming to Carleton. His areas of interest include: robotic analysis, design, and control, machine and biological locomotion, mechatronics, linear and nonlinear control and simulation, virtual reality, distributed and real-time control.

Carleton
AEROSPACE
Carleton University's aerospace research unit





- Jeremy Laliberté specializes in the design of UAVs and MAVs, processing and testing of composites and fibre metal laminate airframe materials, low velocity impact modelling and testing, and biomimetic/ bio-inspired structures for air vehicles. He has led or co-led large projects with a number of Canadian OEMs, and served as research officer at the NRC Institute for Aerospace Research.
- Mostafa El Sayed recently came to us from Bombardier Aerospace where he was an Aircraft Loads Engineering Specialist. He now runs the Carleton Aerospace Materials and Structures Laboratory. His research interests include: multiscale mechanics of ultra-light, multifunctional hybrid materials and structures, advanced manufacturing, dynamics of advanced structures, fluid structure interaction (FSI), stability of materials and structures, thermo-elastic-plastic interaction, and applied mechanics.
- Fidel Khouli also recently joined us from Bombardier Aerospace, where he spent over seven years in the highly technical and experimental role of Dynamics and Aeroservoelasticity Engineer for the new Global 7000 business jet. His research interests include: aeroservoelasticity and fly-by-wire systems, bio-inspired electromechanical systems, applied dynamics, control and smart structures, helicopter flight dynamics, and structural dynamics and stability.
- Robin Chhabra recently came to Carleton from MDA, where he was a Guidance, Navigation and Control Engineer. Robin now runs the Autonomous Space Robotics and Mechatronics (ASRoM) Laboratory. His research interests include robotics and mechatronics, with applications in light-weight space manipulators for autonomous capture and release, space debris removal, planetary exploration rovers, and hierarchical control of space missions.

OUR STATE-OF-THE-ART FACILITIES:

- H.I.H. Saravanamuttoo Gas Turbine Laboratory
- Carleton University's Microfabrication Facility (CUMFF)
- J.Y. Wong Lab for Terrestrial & Extraterrestrial Mobility, Guidance & Control
- Applied Dynamics Laboratory
- Energy and Emissions Research Laboratory
- Low Reynolds Number Tow Tank and 3D Flow Visualization
- Impact Research Lab
- Seven Wind Tunnels
- MAE Structures Lab
- Water Channel Facility
- Rotorcraft Lab
- Aerospace Materials Lab
- Advanced Cognitive Engineering (ACE) Laboratory
- Spacecraft Robotics and Control Laboratory

PROJECTS AND PARTNERSHIPS:

Carleton University has established strong ties the federal and provincial governments, industry partners, research institutions, and international aerospace agencies. The NRC Aerospace Research Centre, the Ontario Aerospace Council, the Canadian Acoustical Association, OCE, NAV Canada, CARIC, CRIAQ, FRACAS, GARDN, and NATO are just a few of our partners. Our faculty also regularly plays a key role in the organization of national and international aerospace events, including but not limited to: the Aerospace robotics, AIAA Guidance, Navigation and Control Conference; the International Conference on Computational and Experimental Sciences; Turbo Expo; CASI AERO, CASI ASTRO, Unmanned Systems Canada and CANCOM.

To find out more, contact:
Jeremy Laliberté
Director, Carleton Aerospace at Carleton University
@ aerospace@carleton.ca
☎ 613-520-2600 ext. 1128
carleton.ca/aerospace

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AEROSPACE
Carleton University's aerospace research unit