Monday November 7th

Time (EST)	**Parallel Session 1**	**Parallel Session 2**	**Parallel Session 3**
Room	**Haldimand**	**Place d'armes**	**Montmagny A**
9h00-10h30		MiddleWedge Workshop	Doctoral Symposium
10h30-11h00	*Coffee break (Room: Montmagny)*		
11h00-12h30	WoC+WoSC Workshop	MiddleWedge Workshop	Doctoral Symposium
12h30-14h00	*Lunch break (Room: Montmagny)*		
14h00-15h30	WoC+WoSC Workshop	AWS Tutorial	
15h30-16h00	*Coffee break (Room: Montmagny)*		
16h00 - 17h30	WoC+WoSC Workshop	AWS Tutorial	

Tuesday November 8th

Time (EST)	**Parallel Session 1**	**Parallel Session 2**
Room	**Haldimand**	**Place d'armes**
9h00-10h30	DICG Workshop	Pareto Anywhere Tutorial
10h30-11h00	*Coffee break (Room: Montmagny B)*	
11h00-12h30	DICG Workshop	Pareto Anywhere Tutorial
12h30-14h00	*Lunch break (Room: Montmagny B)*	
14h00-15h30	DICG Workshop	[redacted]
15h30-16h00	*Coffee break (Room: Montmagny B)*	
16h00 - 17h30	DICG Workshop	Demos and Posters Presentations

Main Conference (November 9th-11th)

Time (EST)	Wednesday Nov. 9	Thursday Nov. 10	Friday Nov. 11
Room	*Main conference room: Jacques Cartier*		
Short intro (9h00-9h30)	Welcome speech	RS 4: Online (Start at 8h30)	Industry session 1
Morning 1 (9h30-10h30)	Keynote 1 (Remzi)	Keynote 2 (Seelam)	
Coffee break (10h30-11h00)	*Coffee break room: Place d'armes*		
Morning 2 (11h00-12h30)	RS 1: Data management	RS 5: Blockchain and Federated Learning	Industry session 2
Lunch (12h30-14h00)	*Lunch room: Champlain & Bibliothèque*		Takeaway Lunch
Afternoon 1 (14h00-15h40)	RS 2: Machine Learning & Deep Learning	RS 6: Edge, Virtualization, and Performance	
Coffee break (15h40-16h00)	*Break room: Place d'armes*		
Afternoon 2 (16h00 - 17h40)	RS3: Security and Trusted Environments	Test-of-Time + MW 23 Address + Business Meeting	
Evening (18h00-20h00)	Demos/Posters Reception *(Room: Montmagny)*	Banquet dinner *(Room: Montmagny)*	

Session Details

Monday, November 7th

MiddleWedge Workshop (First Half): 9h00 - 10h30
Room: Place d'armes

Please visit https://middlewedge22.dcc.fc.up.pt/ for more details

Doctoral Symposium (First Half): 9h00 - 10h30
Room: Montmagny A
Session Chair: Manar Jammal (York University), Abhishek Dubey (Vanderbilt University)

Coffee break: 10h30 - 11h00
Room: Montmagny B

MiddleWedge Workshop (Second Half): 11h00 - 12h30
Room: Place d'armes

Please visit https://middlewedge22.dcc.fc.up.pt/ for more details

Doctoral Symposium (Second Half): 11h00 - 12h30
Room: Montmagny A
Session Chair: Manar Jammal (York University), Abhishek Dubey (Vanderbilt University)

WoC+WoSC Workshop (First Session): 11h00 - 12h30
Room: Haldimand

Lunch Break: 12h30 - 14h00
Room: Montmagny B

WoC+WoSC Workshop (Second Session): 14h00 - 15h30
Room: Haldimand

Please visit https://sites.google.com/view/woc22/home and https://www.serverlesscomputing.org/wosc8/ for more details

AWS Tutorial (First Half): 14h00 - 15h30
Room: Place d'armes
Session Chair: Mohammad Hamdaqa (Polytechnique Montréal), Nadjia Kara (ÉTS Montréal)

Application Integration and Serverless System Design Patterns on AWS (Pelleter, Sabri)

Coffee break: 15h30 - 16h00
Room: Montmagny B

WoC+WoSC Workshop (Third Session): 16h00 - 17h30
Room: Haldimand

Please visit https://sites.google.com/view/woc22/home and https://www.serverlesscomputing.org/wosc8/ for more details

AWS Tutorial (Second Half): 16h00 - 17h30
Room: Place d'armes
Session Chair: Mohammad Hamdaqa (Polytechnique Montréal), Nadjia Kara (ÉTS Montréal)

Application Integration and Serverless System Design Patterns on AWS (Pelleter, Sabri)

Tuesday, November 8th

DICG Workshop (First Session): 9h00 - 10h30
Room: Haldimand

Please visit https://dicg-workshop.github.io/2022/ for more details

Pareto Anywhere Tutorial (First Half): 9h00 - 10h30
Room: Place d'armes
Session Chair: Mohammad Hamdaqa (Polytechnique Montréal), Nadjia Kara (ÉTS Montréal)

Occupying the space in the middle of 100 Billion+ radio-identifiable things and as many contextual applications (Dungen)

Coffee break: 10h30 - 11h00
Room: Montmagny B

DICG Workshop (Second Session): 11h00 - 12h30
Room: Haldimand
Session Chair: Mohammad Hamdaqa (Polytechnique Montréal), Nadjia Kara (ÉTS Montréal)

Please visit https://dicg-workshop.github.io/2022/ for more details

Pareto Anywhere Tutorial (Second Half): 11h00 - 12h30
Room: Place d'armes

Occupying the space in the middle of 100 Billion+ radio-identifiable things and as many contextual applications (Dungen)

Lunch Break: 12h30 - 14h00
Room: Montmagny B

DICG Workshop (Third Session): 14h00 - 15h30
Room: Haldimand

Please visit https://dicg-workshop.github.io/2022/ for more details

Coffee break: 15h30 - 16h00
Room: Montmagny B

DICG Workshop (Fourth Session): 16h00 - 17h30
Room: Haldimand

Please visit https://dicg-workshop.github.io/2022/ for more details

Demos and Posters Presentations: 16h00 - 17h30
Room: Place d'armes
Session Chair: Naser Ezzati-Jivan (Brock University), Nafiseh Kahani (Carleton University)

In this optional session, demos and posters authors have the opportunity to give a presentation about their work, either in person or remotely.

- **OrderlessChain: A CRDT-Enabled Blockchain Without Total Global Order of Transactions**
- Pezhman Nasirifard, Ruben Mayer, Hans-Arno Jacobsen
- **Scalable Distributed Microservices for Autonomous UAV Swarms**
  Kevyn Angueira Irizarry, Zichen Zhang, Christopher Stewart Jayson Boubin
- **Design of Architecture for Reconfigurable Software-Defined Device Middleware**
- Junhee Lee, Ingeol Chun, Sungjoo Kang
- **TrustedCloud: A Framework for the Run-time Trust State Analysis of a Virtual Machine in Cloud Environment**
  Devki Nandan Jha, Graham Lenton, James Asker, David Blundell, David Wallom
- **IoT-OPT: The Swiss Army Knife to Model and Validate the Performance of IoT Products,**
  Pratyush Agnihotri, Manisha Luthra, Miguel Rodriguez, Boris Koldehofe

Wednesday, November 9th (Main Conference)

Room: Jacques Cartier

Opening speech and Keynote #1: 9h00 - 10h30

- **Opening speech** (30 minutes)
  Kaiwen Zhang, Abdelouahed Gherbi (ÉTS Montréal), Saurabh Bagchi (Purdue University), Marta Patino-Martinez (Universidad Politécnica de Madrid)
- **How To Find Research Problems?**
  Remzi Arpaci-Dusseau (University of Wisconsin-Madison)

Discussion Break: 10h30 - 11h00
Room: Place d'armes

Research Session 1 on Data Management: 11h00 - 12h30

- **Reversible Conflict-free Replicated Data Types**

  Yunhao Mao, Zongxin Liu, Hans-Arno Jacobsen (University of Toronto)

- **ShadowSync: Latency Long Tail caused by Hidden Synchronization in Real-time Stream Processing Systems**

  Shungeng Zhang (Augusta University; Louisiana State University); Qingyang Wang (Louisiana State University); Yasuhiko Kanemasa, Julius Michaelis (Fujitsu Limited); Jianshu Liu (Louisiana State University); Calton Pu (Georgia Institute of Technology)

- **A Seer Knows Best: Optimized Object Storage Shuffling for Serverless Analytics**

  Marc Sanchez-Artigas, Germán T. Eizaguirre (Universitat Rovira i Virgili)

- **Multi-Resource Fair Allocation for Consolidated Flash-Based Caching Systems**

  Wonil Choi (Hanyang University); Bhuvan Urgaonkar, Mahmut Taylan Kandemir, George Kesidis (Pennsylvania State University)

Lunch Break: 12h30 - 14h00
Room: Champlain & Bibliothèque

Research Session 2 on Machine Learning & Deep Learning: 14h00 - 15h40

- **EdgeTune: Inference-Aware Multi-Parameter Tuning**
  Isabelly Rocha, Pascal Felber, Valerio Schiavoni (University of Neuchâtel); Lydia Chen (TU Delft)
- **Bolt: Fast Inference for Random Forests**
  Eduardo Romero, Christopher Stewart, Angela Li (The Ohio State University); Kyle Hale (Illinois Institute of Technology); Nathaniel Morris (AMD Research)
- **Aergia: Leveraging Heterogeneity in Federated Learning Systems**
  Bart Cox, Lydia Chen, Jérémie Decouchant (TU Delft)
- **CGX: Adaptive System Support for Communication-Efficient Deep Learning**
  Ilia Markov (IST Austria); Hamidreza Ramezanikebrya (University of British Columbia); Dan Alistarh (IST Austria)
- **Slice-Tune: A System for High Performance DNN Autotuning**
  Aditya Dhakal, K. K. Ramakrishnan (University of California, Riverside); Sameer G Kulkarni (Indian Institute of Technology, Gandhinagar); Puneet Sharma, Junguk Cho (Hewlett Packard Labs)

Discussion Break: 15h40 - 16h00
Room: Place d'armes

Research Session 3 on Security and Trusted Environments: 16h00 - 17h40

- **GuardiaNN: Fast and Secure On-Device Inference in TrustZone Using Embedded SRAM and Cryptographic Hardware**

  Jinwoo Choi, Jaeyeon Kim, Chaemin Lim, Suhyun Lee, Jinho Lee, Dokyung Song, Youngsok Kim (Yonsei University)

- **SecureLease: Maintaining Execution Control in The Wild using Intel SGX**

  Sandeep Kumar, Abhisek Panda, Smruti R. Sarangi (IIT Delhi)

- **SplitBFT: Improving Byzantine Fault Tolerance Safety Using Trusted Compartments**

  Ines Messadi, Markus Horst Becker, Kai Bleeke (TU Braunschweig); Leander Jehl (University of Stavanger); Sonia Ben Mokhtar (LIRIS-CNRS, France); Rüdiger Kapitza (TU Braunschweig)

- **MATEE: Multimodal Attestation for Trusted Execution Environments**

  Anna Galanou, Franz Gregor (TU Dresden); Rüdiger Kapitza (Friedrich-Alexander-Universität Erlangen-Nürnberg); Christof Fetzer (TU Dresden, Germany)

- **Secure and Distributed Assessment of Privacy-Preserving GWAS Releases**

  Túlio Pascoal (University of Luxembourg); Jérémie Decouchant (Delft University of Technology); Marcus Völp (University of Luxembourg)

Reception with Demos and Posters: 18h00 - 20h00
Room: Montmagny

Demos and posters will be displayed and discussed during the reception, while food and drinks are served.

- **Scalable Distributed Microservices for Autonomous UAV Swarms**
  Kevyn Angueira Irizarry, Zichen Zhang, Christopher Stewart Jayson Boubin
- **IoT-Opt: The Swiss Army Knife to Model and Validate the Performance of IoT Products**
  Pratyush Agnihotri, Manisha Luthra, Miguel Rodriguez, Boris Koldehofe
- **TrustedCloud: A Framework for the Run-time Trust State Analysis of a Virtual Machine in Cloud Environment**
  Devki Nandan Jha, Graham Lenton, James Asker, David Blundell, David Wallom
- **On-the-Fly Autoencoders as Subscriptions for Face Detection on Publish/Subscribe System**
  Young Yoon, Seughwan Lee
- **OrderlessChain: A CRDT-Enabled Blockchain Without Total Global Order of Transactions**
- Pezhman Nasirifard, Ruben Mayer, Hans-Arno Jacobsen

- **OrderlessFL: A CRDT-Enabled Permissioned Blockchain for Federated Learning**
- Pezhman Nasirifard, Ruben Mayer, Hans-Arno Jacobsen
- **Design of Architecture for Reconfigurable Software-Defined Device Middleware**
- Junhee Lee, Ingeol Chun, Sungjoo Kang
- **Homomorphic Matching on Publish/Subscribe Brokers based on Simple Integer Partition and Factorization for Secret Forwarding**
- Young Yoon, Jaehoon Kim
- **OrderlessFile: A CRDT-Enabled Permissioned Blockchain for File Storage**
- Pezhman Nasirifard, Ruben Mayer, Hans-Arno Jacobsen
- **Deep Learning driven Anomaly based Intrusion Detection System for IoT**
- Yue Guan, Naser Ezzati-Jivan

Thursday, November 10th (Main Conference)

Room: Jacques Cartier

Research Track Session 4 with Online Presentations: 8h30 - 9h30
Session Chair: Kaiwen Zhang (ÉTS Montréal)

This special early session consists of presenters who could not attend due to travel restrictions.

- **Improving Concurrent GC for Latency Critical Services in Multi-tenant Systems**
  Junxian Zhao, Aidi Pi, Xiaobo Zhou, Sang-Yoon Chang (University of Colorado Colorado Springs); Chengzhong Xu (University of Macau)
- **Optimizing Communication in Deep Reinforcement Learning with XingTian**
  Lichen Pan (Peking University); Jun Qian, Wei Xia, Hangyu Mao, Jun Yao (Noah's Ark Lab, Huawei); PengZe Li, Zhen Xiao (Peking University)
- **BoFL: Bayesian Optimized Local Training Pace Control for Energy Efficient Federated Learning**
  Hongpeng Guo (University of Illinois, Urbana Champaign); Haotian Gu (University of California, Berkeley); Zhe Yang, Xiaoyang Wang (University of Illinois, Urbana-Champaign); Eun Kyung Lee, Nandhini Chandramoorthy, Tamar Eilam (IBM Research); Deming Chen, Klara Nahrstedt (University of Illinois, Urbana-Champaign)

Keynote #2: 9h30 - 10h30

- Hardware-Middleware System co-design for flexible training of foundation models in the cloud
  Seetharami Seelam (IBM T.J. Watson)

Discussion Break: 10h30 - 11h00
Room: Place d'armes

Research Session 5 on Blockchain and Federated Learning: 11h00 - 12h30

- **EventChain: A Blockchain Framework for Secure, Privacy-Preserving Event Verification**
  Signe Schwarz-Rüsch (Friedrich-Alexander University Erlangen-Nürnberg (FAU), Germany); Michael Behlendorf, Markus Becker, René Kudlek, Felix Schoenitz, Hesham Hosney Elsayed Mohamed (TU Braunschweig, Germany); Leander Jehl (University of Stavanger, Norway); Rüdiger Kapitza (Friedrich-Alexander University Erlangen-Nürnberg (FAU), Germany)
- **DCert: Towards Secure, Efficient, and Versatile Blockchain Light Clients**
  Yang JI, Cheng Xu, Ce Zhang, Jianliang Xu (Hong Kong Baptist University)
- **MIXNN: Protection of Federated Learning Against Inference Attacks by Mixing Neural Network Layers**
  Thomas Lebrun, Antoine Boutet, Jan Aalmoes, Adrien Baud (Univ Lyon, INSA Lyon, Inria, CITI)
- **Shielding Federated Learning Systems against Inference Attacks with ARM TrustZone**
  Aghiles Ait Messaoud, Vlad Nitu (INSA Lyon, France); Sonia Ben Mokhtar (LIRIS CNRS, France); Valerio Schiavoni (University of Neuchatel, Switzerland)

Lunch Break: 12h30 - 14h00
Room: Champlain & Bibliothèque

Research Session 6 on Edge, Virtualization, and Performance: 14h00 - 15h40

- **Celestial: Virtual Software System Testbeds for the LEO Edge**
  Tobias Pfandzelter, David Bermbach (Technische Universität Berlin & Einstein Center Digital Future)
- **MicroEdge: A Multi-Tenant Edge Cluster System Architecture for Scalable Camera Processing**
  Difei Cao, Jinsun Yoo, Zhuangdi Xu, Enrique Saurez, Harshit Gupta, Tushar Krishna, Umakishore Ramachandran (Georgia Institute of Technology)
- **Femto-Containers: Lightweight Virtualization and Fault Isolation For Small Software Functions on Low-Power IoT Microcontrollers**
  Koen Zandberg (Inria); Emmanuel Baccelli (Inria, Freie Universität Berlin); Shenghao Yuan, Frédéric Besson (INRIA); Jean-Pierre Talpin (Inria)
- **ROS-SF: A Transparent and Efficient ROS Middleware using Serialization-Free Message**
  Yu-Ping Wang, Yuejiang Dong (BNRist, Tsinghua University); Gang Tan (The Pennsylvania State University, University Park)
- **Light-GC: A Lightweight and Efficient Garbage Collection Scheme for Embedded File Systems**
  Diansen Sun (Huawei Technologies Co., Ltd. & Renmin University of China); Yunlong Song (Huawei Technologies Co., Ltd.); Yunpeng Chai (Renmin University of China); Baoling Peng, Fangzhou Lu, Xiang Deng (Huawei Technologies Co., Ltd.)

Discussion Break: 15h40 - 16h00
Room: Place d'armes

Test-of-Time Award: 16h00 - 16h30

Session Chair: Gordon Blair (Lancaster University)

Business Meeting and MW23 Address: 16h30 - 17h40
Session Chair: Hans-Arno Jacobsen (MSRG)

In this public meeting, we will discuss the future of the conference and gather feedback from the audience. We will also announce the location of the next Middleware conference.

Banquet Dinner: 18h00 - 20h00
Room: Montmagny

Friday, November 11th (Main Conference)

Room: Jacques Cartier

Industry Session 1 on Data handling: 9h00 - 10h30
Session Chair: Ali Kanso (Microsoft)

- **LPR: Learning-based Page Replacement Scheme for Scientific Applications**
  Hwajung Kim, Heon Y. Yeom (Seoul National University)
- **Accelerating RocksDB for Small-Zone ZNS SSDs by Parallel I/O Mechanism**
  Minwoo Im, Kyungsu Kang (Samsung Electronics); Heonyoung Yeom (Seoul National University)
- **Revisiting data lakes: the Metadata Lake**
  Daniel Bauer, Chris Giblin, Luis Garcés-Erice, Niels Pardon, Sean Rooney, Enrico Toniato, Peter Urbanetz (IBM Research Europe)
- **Closed loop optimization of 5G network slices**
  Kavya Govindarajan (IBM Research - India); Seep Goel (IBM Research); Praveen Jayachandran (IBM Research - India); Steve Glover, Jose-Miguel Pulido Villaverde (IBM Software); Jacques Cresp, Joel Viale, Sophie Martin, Fabrice Livigni (IBM Global Sales); Brian Naughton (IBM Software)

Discussion Break: 10h30 - 11h00
Room: Place d'armes

Industry Session 2 on Devices: 11h00 - 12h30
Session Chair: Ani Balasubramaniam (Microsoft)

- **AVOC: History-Aware Data Fusion for Reliable IoT Analytics**

Panagiotis Gkikopoulos (Zurich University of Applied Sciences); Peter Kropf, Valerio Schiavoni (University of Neuchatel, Switzerland); Josef Spillner (Zurich University of Applied Sciences)

- **Towards Data-Driven Additive Manufacturing Processes**
  Vincenzo Gulisano, Marina Papatriantafilou, Zhuoer Chen, Eduard Hryha, Lars Nyborg (Chalmers University of Technology)
- **Proposing a Framework for Evaluating Learning Strategies in Vehicular CPSs**
  Bastian Havers (Chalmers University and Volvo Car Corporation); Marina Papatriantafilou (Chalmers University of Technology); Ashok Koppisetty (Volvo Cars); Vincenzo Gulisano (Chalmers University of Technology)
- **Concluding remarks**
  Kaiwen Zhang, Abdelouahed Gherbi (ÉTS Montréal)

Takeaway lunch: 12h30

End of Middleware 2022