Jaël Champagne Gareau | CV

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Education

Postdoctoral Research in Computer Science
Université TÉLUQ — supervised by Pr. Daniel Lemire *2025–*
Title: Efficient generation of decimal character strings from binary floating-point numbers

Ph. D in Computer Science **4.30/4.30**
Université du Québec à Montréal — supervised by Prs. Éric Beaudry and Vladimir Makarenkov *2019–2024*
Title: Efficient resolution of Markov decision processes by exploiting structural and algorithmic approaches taking advantage of modern computer architecture

M. Sc in Computer Science **4.20/4.30**
Université du Québec à Montréal — supervised by Prs. Éric Beaudry and Vladimir Makarenkov *2017–2019*
Title: Route planning for electric vehicles with uncertain availability of charging stations

Advanced Certificate in Software Development **4.30/4.30**
Université du Québec à Montréal *2016–2017*

B. Sc in Pure Mathematics **3.97/4.30**
Université du Québec à Montréal *2013–2016*

Work and research experiences

Lecturer
Université du Québec à Montréal
- INF3105 : Data structures and algorithms — 2 contracts: 2020, 2024

Teaching assistant
Université du Québec à Montréal
- INF3105 : Data structures and algorithms — 5 contracts: 2019–2024
- INF4230 : Artificial Intelligence — 4 contracts: 2020–2024
- INF5130 : Design and analysis of algorithms — 4 contracts: 2017–2021
- INF5171 : Concurrent and parallel programming — 2021
- INF6120 : Fonctionnal and logic programming — 3 contracts: 2019–2020
- INF1132 : Mathematics for computer science — 7 contracts: 2017–2020
- INF3135 : Software development and maintenance — 5 contracts: 2017–2020
- MAT0339 : General mathematics — 2016

Research and development of Machine-Learning algorithms
Travailleur contractuel en association avec GEVA Solutions et l'Université du Québec à Montréal *2017–2019*

Undergrad research internship in Mathematics (algebraic curves)
Université du Québec à Montréal (CIRGET, ISM), supervised by Pr. Olivier Collin *Summer 2014*

Scholarships and awards

- **Scholarships and grants**:
  - Postdoctoral research grant from Fonds de Recherche du Québec (FRQ) 2025–2027
  - Doctoral Scholarship from Fonds de Recherche du Québec — Nature et Technologies (FRQNT) 2022–2024
  - Alexander Graham-Bell Canada Graduate Scholarship (CGS, NSERC) 2019–2022
  - Master Scholarship from Fonds de Recherche du Québec — Nature et Technologies (FRQNT) 2018–2019
  - Excellence Scholarship from the Faculty of Sciences of UQAM (granted by Hydro-Québec) 2017–2018
  - UQAM's Registrar's Office Scholarship in Computer Science 2017–2018
  - Master's recruitment Scholarship from UQAM's Faculty of Sciences 2017–2018

- **Distinctions**:
  - Best paper award (Canadian AI 2022) 2022
  - Honorable mention for Masters in Computer Science 2019
  - Inscription on the UQAM's Dean of the Faculty of Sciences' list of excellence 2013–2014

Academic Service

- **Reviewer of academic papers**:
  - *International Conference on Robotics and Automation (ICRA)* (x3) 2020, 2025
  - *Software: Practice and Experience (SPE)* (x2) 2024, 2025
  - *IEEE Robotics and Automation Letters (RA-L)* 2024
  - *Canadian AI Conference* (x4) 2022, 2023
  - *European Conference on Artificial Intelligence (ECAI)* (x2) 2023
  - *MDPI Actuators* 2023
  - *IEEE Transactions on Games (TCIAIG)* 2021
  - *Geoinformatica* 2020
- **Help in the organization and good progress of university events**:
  - Welcome day for new graduate students in computer science 2024, 2025
  - Computer Science Career Day 2023
- **Help in the organization and management of conferences**:
  - *Automated Agents and Multiagent Systems (AAMAS)* 2024
  - *Advances in Geographic Information Systems (ACM SIGSPATIAL)* 2019
  - *Educational Data Mining (EDM)* 2019
  - *Intelligent Tutoring Systems (ITS)* 2018
- **Invited speaker**:
  - Invited speaker for the research Wednesdays of the UQAM computer science department February, 19th 2025
  - Presentation at the UQAM's Faculty of Sciences research day April, 4th 2024
  - Invited speaker in the context of the INF9810 seminar course of UQAM 2019, 2020, 2023
  - Poster presentation at the Day of Artificial Intelligence at UQAM March, 28th 2019
  - Presentation at a LATECE seminar at UQAM March, 13th 2019
  - Poster presentation at the Cognitive Computing Symposium at Université TÉLUQ June, 20th 2018

Social experiences and volunteering

Réseau Technoscience
Volunteer for the evaluation of scientific projects at Montréal and Québec's finals for Expo-Sciences *2018–2025*

Université du Québec à Montréal
President of the student's graduate studies in Computer Sciences' Association (AECSI-UQAM) *2018–2024*

Université du Québec à Montréal
Member of the Master and Ph. D Computer Science program Committee *2017–2024*

Université du Québec à Montréal
Participation in the University's Financial vitality plan *2021*
My proposal, *Digitization of theses and dissertations*, was retained by the Vice-Rectorate for Administration and Finance

Technical and personal skills

- **Programming languages:** C, C++, Python, Java, Haskell, Prolog, Bash
- **Other Computer Science skills:** Algorithms, Data Structures, LaTeX, Linux
- **General skills:** Professionnal writing of scientific documents, good communication of scientific concepts
- **Linguistic skills:** French (native language), English (advanced)

Publications marked with an asterisk (*) at the end are conference papers that I presented myself.

Publications

M. Gravel and J. Champagne Gareau. Topology-driven solver selection for stochastic shortest path mdps via explainable machine learning. In *Proceedings of the 38th Canadian Conference on Artificial Intelligence (Canadian AI 2025)*. Canadian Artificial Intelligence Association (CAIAC), 2025.

J. Champagne Gareau, É. Beaudry, and V. Makarenkov. Towards topologically diverse probabilistic planning benchmarks: Synthetic domain generation for Markov decision processes. In J. Trejos, T. Chadjipadelis, A. Grané, and V. Mario, editors, *Data Science, Classification and Artificial Intelligence for Modeling Decision Making – IFCS 2024*, Studies in Classification, Data Analysis, and Knowledge Organization, pages 63–70, Cham, 2024. Springer International Publishing. (*).

J. Champagne Gareau, G. Gosset, M.-A. Lavoie, É. Beaudry, and V. Makarenkov. Increased plan stability in cooperative electric vehicles path-planning. In *ICAPS 2024 Workshop on Human-Aware Explainable Planning*, 2024. URL `https://openreview.net/forum?id=vtWg28K6Lu`.

J. Champagne Gareau, M.-A. Lavoie, G. Gosset, and É. Beaudry. Cooperative electric vehicles planning. In *Proceedings of the 23rd International Conference on Autonomous Agents and Multiagent Systems*, AAMAS '24, pages 290–298, Richland, SC, 2024. International Foundation for Autonomous Agents and Multiagent Systems. ISBN 9798400704864. (*).

J. Champagne Gareau, G. Gosset, É. Beaudry, and V. Makarenkov. Cache-efficient dynamic programming MDP solver. In *Proceedings of the 26th European Conference on Artificial Intelligence (ECAI 2023)*, volume 372 of *Frontiers in Artificial Intelligence and Applications*, pages 373–380, Krakow, 2023. IOS Press. ISBN 978-1-64368-437-6. doi: 10.3233/FAIA230293. (*).

J. Champagne Gareau, É. Beaudry, and V. Makarenkov. Fast and optimal branch-and-bound planner for the grid-based coverage path planning problem based on an admissible heuristic function. *Frontiers in Robotics and AI*, 9, 2023. ISSN 2296-9144. doi: 10.3389/frobt.2022.1076897. URL `https://www.frontiersin.org/articles/10.3389/frobt.2022.1076897`.

J. Champagne Gareau, É. Beaudry, and V. Makarenkov. Cache-efficient memory representation of Markov Decision Processes. In *Proceedings of the Canadian Conference on Artificial Intelligence*, pages 87–96. Canadian Artificial Intelligence Association (CAIAC), 2022. ISBN 978-3-030-91608-4. doi: 10.21428/594757db.0e910d58. URL `https://caiac.pubpub.org/pub/pq25qiqh`. Best-paper Award. (*).

J. Champagne Gareau, É. Beaudry, and V. Makarenkov. pcTVI: Parallel MDP solver using a decomposition into independent chains. In P. Brito, J. G. Dias, B. Lausen, A. Montanari, and R. Nugent, editors, *Classification and Data Science in the Digital Age – IFCS 2022*, Studies in Classification, Data Analysis, and Knowledge Organization, pages 101–109, Cham, 2023. Springer International Publishing. ISBN 978-3-031-09034-9. doi: 10.1007/978-3-031-09034-9_12. (*).

J. Champagne Gareau, É. Beaudry, and V. Makarenkov. Fast and optimal planner for the discrete grid-based coverage path-planning problem. In H. Yin, D. Camacho, P. Tino, R. Allmendinger, A. J. Tallón-Ballesteros, K. Tang, S.-B. Cho, P. Novais, and S. Nascimento, editors, *Intelligent Data Engineering and Automated Learning – IDEAL 2021*, pages 87–96, Cham, 2021. Springer International Publishing. ISBN 978-3-030-91608-4. doi: 10.1007/978-3-030-91608-4_9. (*).

J. Milot, J. Champagne Gareau, and É. Beaudry. An energy-efficient method with dynamic GPS sampling rate for transport mode detection and trip reconstruction. In C. Goutte and X. Zhu, editors, *Advances in Artificial Intelligence – Canadian AI 2020*, pages 408–419, Cham, 2020. Springer International Publishing. ISBN 978-3-030-47357-0. doi: 10.1007/978-3-030-47358-7_42.

Z. Aouabed, M. Abdar, N. Tahiri, J. Champagne Gareau, and V. Makarenkov. A novel effective ensemble model for early detection of coronary artery disease. In M. Serrhini, C. Silva, and S. Aljahdali, editors, *Innovation in Information Systems and Technologies to Support Learning Research*, pages 480–489, Cham, 2020. Springer International Publishing. doi: 10.1007/978-3-030-36778-7_53.

J. Champagne Gareau, É. Beaudry, and V. Makarenkov. An efficient electric vehicle path-planner that considers the waiting time. In *Proceedings of the 27th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, SIGSPATIAL '19, pages 389–397, New York, NY, USA, 2019. ACM. ISBN 9781450369091. doi: 10.1145/3347146.3359064. (*).

J. Champagne Gareau, É. Beaudry, and V. Makarenkov. A fast electric vehicle planner using clustering. In T. Chadjipadelis, B. Lausen, A. Markos, T. R. Lee, A. Montanari, and R. Nugent, editors, *Data Analysis and Rationality in a Complex World – IFCS 2019*, Studies in Classification, Data Analysis, and Knowledge Organization, pages 17–25, Cham, 2021. Springer International Publishing. ISBN 978-3-030-60104-1. doi: 10.1007/978-3-030-60104-1_3. (*).

J. Champagne Gareau, É. Beaudry, and V. Makarenkov. Planification d'itinéraires optimaux pour véhicule électrique en considérant le regroupement de bornes de recharge et leur probabilité d'occupation. In *Actes de conférence des XXVe rencontres de la Société Francophone de Classification (SFC2018)*, pages 5–8, 2018. (*).