

# 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 Makarencov

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 Makarencov

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

### Artificial Intelligence Consultant

Centre d'accès à l'information Juridique (CAIJ)

2026–

### 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

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### ○ Reviewer of academic papers:

- *Software: Practice and Experience (SPE)* (x5) 2024, 2025, 2026
- *Journal of Classification (CLAS)* 2026
- *International Conference on Robotics and Automation (ICRA)* (x3) 2020, 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

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### Réseau Technoscience

Volunteer for the evaluation of scientific projects at Montréal and Québec's finals for Expo-Sciences 2018–2026

### 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

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- **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.  
This list is non-exhaustive and is limited to a selection of my main publications.

## Publications

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- J. Champagne Gareau and D. Lemire. Converting an integer to a decimal string in under two nanoseconds. *Software: Practice and Experience*, 2026. <https://arxiv.org/abs/2604.26019>. Accepted for publication.
- J. Champagne Gareau and D. Lemire. Converting binary floating-point numbers to shortest decimal strings: An experimental review. *Software: Practice and Experience*, 56(4):462–478, 2026. <https://doi.org/10.1002/spe.70056>.
- M. Gravel and J. Champagne Gareau. Topology-driven solver selection for stochastic shortest path MDPs via explainable machine learning. In *Proceedings of the 38<sup>th</sup> Canadian Conference on Artificial Intelligence (Canadian AI 2025)*, Calgary, Canada, May 2025. Canadian Artificial Intelligence Association (CAIAC). <https://doi.org/10.21428/594757db.f73769f4>.
- 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 61–69, San José, Costa Rica, 2025. Springer International Publishing. [https://doi.org/10.1007/978-3-031-85870-3\\_7](https://doi.org/10.1007/978-3-031-85870-3_7). (\*)
- 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. <https://openreview.net/forum?id=vtWg28K6Lu>.
- J. Champagne Gareau, M.-A. Lavoie, G. Gosset, and É. Beaudry. Cooperative electric vehicles planning. In *Proc. of the 23rd International Conference on Autonomous Agents and Multiagent Systems, AAMAS '24*, pages 290–298, Auckland, New Zealand, 2024. IFAAMAS. ISBN 978-1-4007-0486-4. <https://ifaamas.org/Proceedings/aamas2024/pdfs/p290.pdf>. (\*)
- 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, Kraków, Poland, 2023. IOS Press. ISBN 978-1-64368-437-6. <https://doi.org/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. <https://doi.org/10.3389/frobt.2022.1076897>.
- 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, Porto, Portugal, 2023. Springer International Publishing. [https://doi.org/10.1007/978-3-031-09034-9\\_12](https://doi.org/10.1007/978-3-031-09034-9_12). (\*)
- 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, Online, 2022. Canadian Artificial Intelligence Association (CAIAC). ISBN 978-3-030-91608-4. <https://doi.org/10.21428/594757db.0e910d58>. Best-paper Award. (\*)
- 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, Online, 2021. Springer International Publishing. [https://doi.org/10.1007/978-3-030-91608-4\\_9](https://doi.org/10.1007/978-3-030-91608-4_9). (\*)
- 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, Thessaloniki, Greece, 2021. Springer International Publishing. ISBN 978-3-030-60104-1. [https://doi.org/10.1007/978-3-030-60104-1\\_3](https://doi.org/10.1007/978-3-030-60104-1_3). (\*)
- 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, Ottawa, Canada, 2020. Springer International Publishing. [https://doi.org/10.1007/978-3-030-47358-7\\_42](https://doi.org/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, Marrakech, Morocco, 2020. Springer International Publishing. [https://doi.org/10.1007/978-3-030-36778-7\\_53](https://doi.org/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, Chicago, USA, 2019. ACM. ISBN 978-1-4503-6909-1. <https://doi.org/10.1145/3347146.3359064>. (\*)