Alex Beaudin

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Citizenship: Canada

Education

2023 – 2028 (Expected) **UC Berkeley** – Berkeley, USA
Ph.D. Electrical Engineering and Computer Science
GPA: 4.00/4.00.
Research Interests: *Multi-agent systems and collaborative robotics*
Coursework: *CS281B: Advanced Topics in Learning and Decisions; EECS 206B: Robotic Interaction; EE290: Modeling and Control of Multi-Agent Systems; EE223: Stochastic Systems*

2019 – 2023 **McGill University** – Montreal, Canada
B. Sc. Honours Computer Science and Physics
GPA: 3.99/4.00.
Thesis title: *Multi-robot Path Planning with Explicit Re-Synchronization*

2017 – 2019 **Marianopolis College** – Montreal, Canada
DEC Honours Pure & Applied Sciences

Research experience

2023 – Present **Arcak Group PhD Researcher**
Supervisor: Professor Murat Arcak (UC Berkeley).
PhD projects in control and robotics. Use of learning models for robust modeling of unknown dynamics in dynamic systems and path planning under uncertainty.

2022 **COMP 400 — Undergraduate Thesis**
Supervisor: Professor Gregory Dudek (McGill University).
Thesis project exploring algorithms for surveying unknown environments with two robots and ensuring anytime property. Implemented algorithms in the IR ASV Unity/ROS simulator with two robots.

Summer 2021 & Fall 2022 **NSERC USRA Summer Research Project**
PI: Professor Hsiu-Chin Lin (McGill University).
Replicated the Motion-Imitation Project, and implemented motion planning algorithms using non-linear programming and neural nets on quadrupedal robots.

2020 – 2021 Academic year **Research Internship at DECAR**
PI: Professor James Richard Forbes (McGill University).
Created a ROS package for visualizing point-cloud data from an OUSTER LiDAR, and synchronized sensors via PTP. Introduction to control and estimation; audited MECH 600.

Summer 2019 & 2020 **Summer Research Project**
PI: Professor Oscar Hernández (McGill University).
Compared flat CMB anisotropy approximations to curved counterparts analytically and numerically for the purpose of eventually correcting and looking for cosmic strings in experimental data.

Publications

2022 A. Beaudin and H.-C. Lin, "Learning Agile Paths from Optimal Control". Conference on Robot Learning, Learning for Agile Robotics Workshop, 2022
Available: arXiv, Learning for Agile Robotics Workshop

Teaching experience

Fall 2024 **Graduate student instructor, ELENG 221A: Linear Systems Theory (UC Berkeley)**
Properties of linear systems. Controllability, observability, minimality, state and output-feedback. Stability, Observers, the Kalman decomposition. Abstract linear algebra. Created assignments and exams in conjunction with the instructor of record, and held office hours and recitation sections.

Fall 2021 **Undergraduate teaching assistant, PHYS 350: Honours Electricity & Magnetism (McGill University)**
Electrostatics, electrodynamics, Poisson's equations... Aided teaching assistants in generating assignment solutions and attended tutorials and provided assistance to students for understanding the material.

2019 **Peer tutor (Marianopolis College)**
Tutored students for math and physics courses, assisting them in clearing up misconceptions and improving their grasp of course content.

2015 – 2019 **Freelance tutor**
Tutored students for math and physics courses, assisting them in clearing up misconceptions and improving their grasp of course content.

Work experience

May 2021 – August 2023 **Co-founder, CTO, Developer (Layer N)** – Montreal, Quebec
Lead technological efforts and design to create an L2 for the Solana blockchain with 10x throughput. Implement smart contracts in Rust and research proof algorithms to adapt for state validation.
Raising from major actors in the field at $50M pre-seed valuation despite November 2022 events.

Community Involvement and Leadership

May 2022 – May 2023 **Director, Accountability Committee (Science Undergraduate Society)**
Oversee the general function and integrity of the SUS, and hold elected members accountable to fulfilling the duties assigned to them as well as providing assistance when necessary.

May 2021 – May 2022 **President (McGill Society of Physics Students)**
Oversee the function and continuity of the Society. Notable projects include instating a peer tutoring service free for tutees, working alongside EDI Officer in addressing specific harassment issues in the department of physics, and updating the Society website. Assumed duties of the VP Academic upon their resignation.

May 2020 – May 2021 **VP External (McGill Society of Physics Students)**
Acted as liaison between the SUS and MSPS, and organized events for students via the Awkward Committee. Received "Interdepartmental Event of the Year" award from the SUS for the Awkward Mixer.

2016 – 2019 **Robotics Teams: Electrical and Programming Lead**
(Selwyn House School, Marianopolis, McGill)
Oversaw design and execution of programming and electrical wiring of the robots to compete in the Canadian Robotics Competition (CRC).
Multiple top 5 finishes for diverse objectives over the years despite small team sizes.

Honors and awards

2024 Doctoral Training Scholarship (CAD $100,000)
Fonds de recherche du Québec (Quebec Research Fund)
For strength of academic journey and exhibition of research promise.

2021 Emily Ross Crawford Scholarship
McGill Faculty of Science
For academic merit, overriding the Faculty of Science Scholarship

2021 Excellence Bursary for Computer Science, Computer Engineering and Computer Construction, and Electrical, Electronic and Communications Engineering
Ministère de l'enseignement supérieur

Summer 2021 Undergraduate Research Supplement
Fonds de recherche du Québec — Nature et technologies
Awarded for conducting promising research.

Summer 2021 Undergraduate Summer Research Award
National Sciences and Engineering Research Council
Awarded for academic excellence and exhibiting research promise.

2020 Faculty of Science Award
McGill Faculty of Science
For achieving top 5% academic standing in the faculty of Science.

2019 – 2021 Bourse d'études Hydro-Québec en sciences
Hydro-Québec
For overall outstanding students entering undergraduate degrees.

2017 Director General's Academic Merit Award
Marianopolis College
For outstanding academic standing upon entry to CEGEP, Marianopolis College.

Technical skills

Programming languages
Proficient in: Rust, Python, C/C++, Mathematica, Bash, Matlab
Familiar with: Typescript, OCaml

Software
LaTeX, git, Unix, ROS, IoT

Languages
French (native), English (native)