Antoine Dangeard

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Education

McGill University — B.Eng Software Engineering, Minor in Applied A.I. Montreal, Canada
CGPA 3.85/4.0 *2020 - 2025*

Professional Experience

NLP Research Assistant Aug. 2024 - May 2025
McGill N.L.P. Lab (at MILA) *Montreal, Canada*

- Working directly with Ines Arous, Ph.D, under Prof. Jackie Cheung, on the continuation of the **TaxoComplete** paper.
- Improved accuracy of method by nearly 50% through modification of data labelling when training LLM backbone.
- Explored and justified research decisions verbally and in writing through experimentation and literature review.
- Currently preparing for submission to peer-reviewed journal.

H.i.L. Software Engineer Intern May - Aug. 2024
Torc Robotics *Montreal, Canada*

- Implemented data injection for HiL (Hardware-in-the-loop) test benches, enabling manual and CI/CD testing of ROS components.
- Created ROS2 MCAP replay and recording tool from scratch in C++ with Python bindings. Allows for replay and recording of messages without requiring prior knowledge of custom message types through only a single distributable environment and under 5 setup commands.

Software Engineer Intern in Robot Team May - Aug. 2023
Vention *Montreal, Canada*

- Optimized joint speed limiting during Cartesian linear movements of 6-D.O.F. robotic arms, resulting in increased maximum speed of linear movements and improved U.X. Decreased cycle time for pick-and-place tasks by up to 20%.
- Improved U.I. to view and modify end effector offsets and view live status of hardware, and added self-collision checking for end effector.

Extra-Curricular

Project Manager and Software Lead Sep. 2024 - May 2025
McGill Humanoid Project *Montreal, Canada*

- Founded design team of 6 focused on building a humanoid robot, successfully raising over $10,000 in value in under 4 months.
- Single-handedly created reinforcement learning pipeline, simulations in MuJoCo and Unity, model-predictive control infrastructure, and software architectural design from scratch using Python, C++, PyTorch and Jax.

Research Volunteer May 2024 - Jan. 2025
Neuro AI *Montreal, Canada*

- *Aug. 2024-Jan. 2025*: Research project accepted to NeurIPS conference. Implemented reinforcement learning training pipeline for training baseline algorithms in PyTorch.
- *May 2024-Sep. 2024*: Provided guidance, technical advice and help with implementation to student building reinforcement learning research project.

Research Volunteer May 2023 - May 2025
Prometheus Lab *Montreal, Canada*

- *May 2024-Jan. 2025*: Proposed and implemented independent research project on domain knowledge-based pre-training for reinforcement learning control policies using PyTorch.
- *Sep.-Dec. 2023*: Re-designed and implemented server infrastructure for multi-agent inter-robot communication and control, reducing number of lines of code from over 5000 to less than 300 whilst improving functionality and maintainability.
- *May-Sep. 2023*: Technical lead for multi-agent robotic delivery project. Obtained $7500 TechAccel Summer Stipend from McGill Engine and implemented control, mapping, and planning ROS packages for vehicle from scratch.

McGill Robotics AUV Software Sep. 2022 - August 2024
Software Team Lead *May 2023 - August 2024*

- Led members in effort to build state estimation, pose control, computer vision, and simulation software. Involved concepts like EKFs, PID controls for quaternions, CNNs for discrete 3D scene reconstruction, OpenCV for image processing, etc.
- Built new simulation from scratch in Unity with improved performance, more Q.o.L. features, and better sim-to-real.
- Created tutorials, onboarding plan, and thorough documentation for new members; more than doubling retention rate from previous years.
- Implemented mandatory code reviews, issue tracking, scheduled documentation upkeep, and automatic integration testing pipelines, successfully preventing any major code breakages throughout the year.

Software Team Member *Sep. 2022 - May 2023*

- Reached semi-finals for the first time since 2020 with all-new software stack.
- Built object detection, mapping, and autonomous planner from scratch using YOLO, a custom 2D-to-3D scene reconstruction module, and recursive state machines.

Skills

Languages: American English (Native Speaker), French (Native Speaker)
Programming: Python, C++, Bash, Javascript, C, Java, C#
Frameworks: ROS (1 & 2), Pandas/NumPy, CUDA/Jax, PyTorch/TensorFlow/Keras, Unix, Networking Protocols, Node.js, React.js
Developer Tools: Colab/Jupyter, Docker, Git, GitHub/GitLab, AWS, Jenkins, Slurm, Unity, MuJoCo, Gazebo

Awards

Tomlinson Engagement Award for Mentoring in MECH 360 (Principles of Manufacturing) December 2023
2nd place at McGill A.I. Hackathon September 2023
1st place at McGill RoboHacks March 2023
Top 5 of 115 at McHacks January 2023
Top 10 at McGill Data Challenge January 2023
Grade A in McGill A.I. Society M.L. Boot-Camp September - December 2021