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

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 labelling scheme.
- Explored and justified research decisions through experimentation and literature review.
- Work ongoing.

H.i.L. Software Engineer Intern May - Aug. 2024
Torc Robotics *Montreal, Canada*
- Researched, designed and implemented data injection infrastructure for HiL (Hardware-in-the-loop) test benches. Design supported manual and automatic (CI/CD) testing of ROS components with MCAPs.
- Created ROS2 MCAP replay and recording tool from scratch in C++ with Python bindings. Enabled developers to replay and record any messages without requiring prior build of custom message types.
- Simplified testing procedure from requiring custom builds and 15-20 commands to a single distributable environment and under 5 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-of-arm tool offsets and view live status of hardware.
- Implemented self-collision checking for end-of-arm tools.

Extra-Curricular

Project Manager and Software Lead Jan. 2024 - May 2025
McGill Humanoid Project *Montreal, Canada*
- Founded undergraduate team focused on building and controlling a humanoid robot
- Led 10 engineers, successfully raising over $10,000 in value in under 4 months.
- Single-handedly created software architecture, R.L. and R.O.S. simulations (MuJoCo/Unity), R.L. training framework and model-predictive control infrastructure from scratch.

Research Volunteer May 2024 - Jan. 2025
Neuro AI *Montreal, Canada*
- *Aug. 2024-Jan. 2025*: Research project accepted to NeurIPS conference. Implemented RL training pipeline, optimized simulation to improve performance of RL policies, and technical writing for paper.
- *May 2024-Sep. 2024*: Provided guidance and technical advice. Regularly met with the student implementing the research effort to answer questions, help with problems encountered during implementation and make design decisions.

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.
- *Sep.-Dec. 2023*: Re-designed and implemented server infrastructure for multi-agent inter-robot communication and control. Reduced number of lines of code in the server from over 5000 to less than 300 whilst preserving functionality and improving maintainability and compatibility with robot hardware.
- *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*
- 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.
- Build new simulation from scratch with improved performance, more Q.o.L. features, and better sim-to-real than previous framework.
- Assisted members with state estimation, pose control, computer vision, and simulation.

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.

Skills

Languages: Fluent in English and French
Programming: Python, C++, Bash, Javascript, C, Java, C#
Frameworks: ROS (1 & 2), Pandas/NumPy, CUDA, PyTorch/TensorFlow/Keras, Unix, Networking Protocols, Node.js, React.js
Developer Tools: Colab/Jupyter, Docker, Git, GitHub/GitLab, AWS, 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