Jason Matthews

St. John's, NL | jbmatthews@mun.ca | (709) 660-8421 | Personal Site | Jason Matthews | JB55Matthews

Experience

Memorial University of Newfoundland, St. John's, NL **May 2024 - Present**
Research Assistant - Department of Mathematics and Statistics

- Developing PinnDE, a Python library implementing physics-informed neural networks and deep operator networks to solve ordinary and partial differential equations, using mainly Python, C++, and frameworks TensorFlow and JAX.
- Created documentation website using ReadTheDocs, (https://pinnde.readthedocs.io/en/latest/), demonstrating an ability to create high-quality documentation.
- Wrote and published preprint "PinnDE: Physics-Informed Neural Networks for Solving Differential Equations", (10.48550/arXiv.2408.10011), which has currently been cited in many journal articles.

Paradigm Engineering, St. John's, NL **Sept 2024 - Present**
Software Team Member (Student Group)

- Designed and implemented main waypoint finding algorithm using mainly ROS2, C++, and Python within self-created Gazebo Classic simulations for a Pixhawk 4 autopilot controller to make an autonomously driving kart.
- Worked with printed circuit boards as well as many embedded systems such as ESP32's and Arduino's.

Kent Building Supplies, Corner Brook, NL **May - Aug, 2020 - 2023**
Seasonal Associate

- Redesigned seasonal floor plans every and garden center every year to be more efficient for product movement and selling.

Awards/Scholarships

Schulich Leader Scholarship **Jun 2022**

- Canada's most prestigious undergraduate STEM scholarship, awarded to only 100 graduating high school students in Canada each year, with only 50 for science students. Valued at $80,000 over four years.

TechNL Making Waves Innovator Scholarship ($2,826.00) **Jan 2024**

Memorial University Faculty of Science Dean's List **2022 - 2023, 2023 - 2024, 2024 - 2025**

Education

Memorial University of Newfoundland **Expected Graduation - May 2027**
Bachelor of Science - Joint Honours in Computer Science and Pure Mathematics

Selected Projects

Note: Many other projects not noted are on personal website (linked above) and GitHub page.

Seam Carving - *Personal Project - github.com/JB55Matthews/SeamCarving* **Aug 2024**

- Java application which allows users to upload images and dynamically resize them using a technique known as seam carving, which removes unimportant sections of images while keeping important sections after resizing.
- This implementation uses the Sobel operator, edge detection, and dynamic programming for energy function computation.

WAM 7R Arm - *Academic Project - github.com/JB55Matthews/Comp3766_FinalProject_Group12* **Mar 2025**

- Using ROS, RViz, with C++ and Python scripts to implement the Barret Technologies 7 revolute joint WAM robotic arm in simulation.
- Implementation of forward and inverse kinematics through RViz with scripts to control joint and end-effector positions.

Custom Sudoku Solver - *Personal Project - github.com/JB55Matthews/Sudoku-CSP-Algorithm-Solvers* **Dec 2024**

- Interface in Java which allows users to input Sudoku puzzles and combine different csp algorithm techniques to solve them, including dfs with partial pruning, AC-3 inferencing, and minimum conflicts local search.

Skills

Languages: Java, C/C++, Python, JavaScript, TypeScript, Go
Embedded: ESP32, Arduino, Verilog
Frontend: HTML, CSS, AstroJS, ReactJS, NodeJS, TailwindCSS
Database: SQLite, MySQL
Tools: Git, GitHub Actions, Docker, TensorFlow, JAX, ROS/ROS2, Gazebo, RViz