

OBJECTIVE

Hardworking and tenacious software developer with experience in machine learning and full-stack development, seeking to expand my skills and expertise in innovative solutions. I enjoy tackling complex challenges that require both creative and technical approaches. Having graduated with a Master's in Electrical and Computer Engineering, I have crafted customized web solutions using Laravel and Drupal, optimized SQL queries, and developed scalable, high-performance applications. I am passionate about AI/ML, and eager to contribute to cutting-edge projects.

WORK EXPERIENCE

- **Red Rabbit** Ottawa, ON
Lead Developer for Customized Web Solutions *Feb. 2023 - Sep. 2025*
 - **Provincially Backed Registration System:** Led the end-to-end development of a provincially funded registration system, meeting with clients to define requirements, designing and building the website from the ground up, and managing the full development lifecycle to successfully bring it to market.
 - **Custom Web Solutions:** Full-stack development of completely customized websites using Drupal and Laravel frameworks. Tailored solutions including registration systems, e-commerce platforms, contest sites, and data aggregation and analytics portals.
 - **Web Development Lifecycle:** Managed multiple production websites with a full deployment system across development, staging, and production environments. Utilized Docker Images, DDEV Environments, and orchestrated workflows via GitLab CI/CD through multiple projects, deploying with Dokku or Docker Compose
 - **Continuous Integration and Deployment:** Implemented CI/CD pipelines for automatic image deployment across multi-project builds, from development through production, in a collaborative team environment. Integrated built-in automated testing and linting.
 - **Team Leadership and Training:** Oversaw the training of new employees, ensuring they were brought up to speed on technical workflows, tools, and project requirements. Played a key role in assessing their ongoing performance and making decisions regarding their continued roles within the company.
 - **Key Projects and Technical Contributions:** Implemented a custom JWT-based authentication system to secure all API routes. Developed a custom cart checkout and payment gateway fully integrated with SportsPay, handling a combined transaction volume exceeding seven figures, including refunds and scheduled payments. Integrated DocuSign API for digital document management, enabling secure electronic signatures. Utilized Microsoft Azure OCR and Python to match purchased products on receipts for contest entry validation. Integrated OpenAI models into client platforms to enable spam detection and mitigation, improving data quality and user trust.
 - **Technical Skills and Tools:** PHP, SQL, Drupal, Laravel, ORM, Python, Docker, Postman, OpenAPI, Gitlab CI, API Consumption, Composer, Vuetify, Unix Shell, Microsoft Azure OCR, OpenAI LLMs
- **Government of Canada: Statistics Canada (Co-op)** Ottawa, ON
Database Management *Jul. 2020 - Dec. 2021*
 - **SQL:** 18-Month Student intern for the database application development support team. Assisted in preparing and stress-testing data aggregation queries used in the 2021 Census. Designed and implemented new database architectures to support upcoming aggregation and processing needs. Provided support to various departments, troubleshooting and enhancing existing SQL queries

APPLIED PROJECTS

- **Master's Thesis Project (Multi-Agent Reinforcement Learning)** *May 2021 - Sep. 2023*
Carleton University
 - Sponsored by Ericsson, the thesis research focused on the novel use of multi-agent reinforcement learning by both Base Stations and User Equipment to optimize resource allocation in 5G networks.
 - Developed a 5G network simulator to model mobile network transmission characteristics, focusing on complex resource allocation challenges such as Resource Blocks, Transmission Frequency/Power, Beamforming, and Beamcombining.

- Addressed the challenges using Machine Learning to train advanced Neural Networks to form a collaborative group policy between all User Equipment and Base Stations.
- Results include the metrics for several Neural Network-based MARL algorithms, including QTRAN, MADDPG, and IQL.
- Python: Keras, TensorFlow, PyTorch, NumPy, Pandas

Directed Studies - Real-Time Simulation on Embedded Systems

Carleton University

May, 2022 - Sep. 2022

- Contributed to advancing the Discrete Event System Specification (DEVS) by porting Carleton's first generation Cadmium simulator to an object-oriented second generation in C++. The four-month directed study involved dissecting and redesigning the simulator to support real-time execution for embedded systems. The redevelopment enabled V2 to run fully object-oriented code for virtual simulations or direct deployment on microcontrollers. The real-time simulator is actively utilized by several PhD and Master's students for their thesis research, demonstrating its value as a core tool for advanced academic studies

Personal Portfolio

Jon Menard's Portfolio

Jan. 2019 - Present

- Created a personalized playground showcasing a portfolio of projects developed from scratch, featuring various interactive games such as Snake, Flappy Bird, Minesweeper, and Tetris. <https://jonmenard.github.io/games>
- Integrated AI algorithms to solve Minesweeper and Tetris. Used supervised Machine Learning to train Neural Networks for object localization in images.
- Worked in Unity to simulate a self-parking car amid obstacles. Trained a custom Neural Network using Reinforcement Learning to control the car's gas, brake, and steering. Live at: <https://jonmenard.github.io/machineLearning.html> (Desktop only)

EDUCATION

Carleton University

Ottawa, ON

Master of Applied Science - Electrical and Computer Engineering; Standing: A+

Sep. 2021 - Sep. 2023

Bachelor of Engineering - Software Engineering; Standing: A-

Sep. 2017 - May. 2021

PUBLICATIONS

- **Decentralized and Joint Resource Allocation, beamforming and beamcombining for 5G Networks with Heterogeneous MARL:** <https://doi.org/10.1109/ACCESS.2025.3576190>
- **Decentralized Resource Allocation in 5G Networks with Heterogeneous Multi-Agent Reinforcement Learning:** <https://doi.org/10.22215/etd/2023-15915>
- **A Web Based Modeling and Simulation Environment to Support the DEVS Simulation Lifecycle:** <https://doi.org/10.23919/ANNSIM52504.2021.9552123>

INTERESTS

- **Machine Learning and Reinforcement Learning:** Deeply interested in leveraging supervised learning models and reinforcement learning to solve complex, real-world problems. I enjoy exploring how AI can enhance automation and decision-making in diverse applications.
- **Optimization:** Passionate about improving computational performance and efficiency. I find great satisfaction in refining complex tasks (such as SQL queries) and system processes to maximize data handling and streamline operations.
- **Solution Architecture:** Enjoy designing robust, scalable solutions that not only meet technical specifications but also align seamlessly with business goals. My focus is on creating architectures that are both innovative and sustainable.
- **Problem-Solving:** Driven by a love for solving intricate technical challenges. Whether it's through algorithm design or system architecture, I am constantly seeking new ways to innovate and improve efficiency.