NICHOLAS MASSAD

Machine Learning Engineer

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EDUCATION

Master of computer science (AI specialisation) 01/2023 - 09/2024
Université de Sherbrooke

Bachelor of Electrical Engineering 09/2018 - 12/2022
Université de Sherbrooke

B.Sc. of Physics 09/2017 - 05/2018
Université de Sherbrooke

EXPERIENCE

AI Engineer Intern 05/2022 - 08/2022
Levio Sherbrooke

- Benchmarked Move it! planners and OMPL planners
- Recreated custom base classes for path planning algorithms
- Developed PathPlanning solutions for multijoint robot arm combining features from PRM, SBL and ABIT* path planning algorithms
- Implemented creative problem solving skills to create custom path planning solution for low resource hardware

AI and robotics software developer Intern 09/2021 - 12/2021
Levio Sherbrooke Quebec Canada

- Worked with a team of robotic engineer interns to develop a simulation environment for a robotic arm
- Developed an interface for the robotic arm which served to remotely control and test the arm's capabilities
- Created an interface using Docker to deploy control solution on various architectures

Sales Analyst Intern 01/2021 - 04/2021
BRP Sherbrooke Quebec Canada

- Developed a Machine Learning system capable of forecasting sales of side-by-side vehicles across retailers in the US using time series data as well as some external factors such as weather events
- This contribution increased sales forecasting precision by 31% over internal preexisting models

Residential Property Vice-President 08/2022 - Present
9349-6529 Quebec INC Sherbrooke Quebec Canada

- I manage the finances, the general organization of the team as well as perform resource allocation
- I manage a total of 53 apartments
- This includes assigning employees to different tasks
- My role requires quick thinking, problem solving, showing and renting apartments as well as working closely with contractors and designers to meet deadlines

Research Intern 09/2019 - 08/2020
Université de Sherbrooke Sherbrooke Quebec Canada

- My internship consisted of MEMristor caracterisation by development of a PCB with read/write capabilities as well as the software interface in QT
- Designed Probe Card for testing MEMristor CMOS
- Cooperated with Wentworth Laboratories in developping a cantilever probe card

SUMMARY

I am an Electrical Engineer currently completing my masters in computer science with a focus on Artificial Intelligence. I am skilled in data science and experienced in AI applications for robotics and financial analysis. I am passionate about exploring various fields, including finance, history, politics, science, and philosophy. I am a quick learner who thrives on thought-provoking debates and enjoys bringing a multidisciplinary perspective to problem-solving.

LANGUAGES

French Native ●●●●●
English Native ●●●●●

SKILLS

Skilled Fields

Artificial Intelligence · Task Planning · Large Language Models · Robotics · Data Science · Electrical Engineering · Machine Learning · PCB design · Robotics · time series analysis

Programming Skills

Python · C++ · SQL · Pytorch · PDDL · Tensorflow · Pandas · PowerBI · GIT

Personal skills

Creative · Teamwork · Complex Problem Solving · Leadership · Quick Learner

PROJECTS

Masters Research on automated planning
04/2023 - Present

Université de Sherbrooke

The goal of this research was to allow robotic agents to automatically adapt their internal domains in response to a change in their environment, this would have applications in various sectors, such as rapid response, space exploration, defense and logistics among others

- Developed a hybrid RAG - PDDL architecture to automatically update preexisting domains based on events in the environment with no human input
- Developed an automated back prompting debugging framework to automatically correct errors in PDDL outputs from the LLM
- Created and annotated a database of 4 domains as well as their modifications
- Developed an automated pipeline for testing and computing results of my proposed architecture
- Achieved an average of 86.9% in creating valid task plans from automatically modified domains without any human input, compared to an average 97.5% success rate with a human in the loop
- Current follow up research focuses on implementing this strategy on real world robotics in combination with simple human input

AI Trading model
2021 - Present

Sherbrooke

Developed a multilayered model to optimise signal prediction for swing trading

- Developed an evolutionary algorithm to optimise indicator based strategies
- Developed, trained and tested 3 LSTM based models to predict daily, weekly and monthly trends
- Developed 3 transformer based architectures to predict daily, weekly and monthly best long and short positions
- Used Reinforcement Learning in a custom Paper trading environment to optimize agent trading strategies

OUREA
2020 - 2022

Sherbrooke

Participated in designing, developing and building a hybrid gas electric drone for extreme weather conditions

- Successfully raised 42 000$ in sponsorships
- Showed teamwork and project management skills over the course of 2 years to bring this project to life with a team of 9 other engineering students in different fields.

Spaceport 2019
01/2019 - 09/2019

Université de Sherbrooke

Competed in a North American rocket competition where the goal is to launch a rocket to a specific target altitude and have it remotely deploy a parachute to recuperate onboard payload.

- Contributed in the revival of the CASUS rocket program of the University of Sherbrooke
- Contributed to the payload protection and communication system
- Assisted in the development of the parachute deployment system and assembly of the rocket