

RUPIN KHADWAL

t: 905-612-1374 e: rupin.khadwal@mail.utoronto.com l: www.linkedin.com/in/rupin-khadwal git : <https://github.com/rupink> s: rupink.github.io

Education

University of Toronto – Engineering Science, Toronto ON

Expected Graduation June 2024

- *BASc in Engineering Science, Major in Machine Intelligence*
- Relevant coursework includes *Introduction to Computer Programming, Computer Algorithms* and *Data Structures, Python for Data Learning and Visualization*

Work Experience

University of Toronto, ESC180 – Introduction to Programming

Toronto, ON

Teaching Assistant

Sept 2023 – Dec 2023

- Helping primarily non-engineering majoring students learn basic - intermediate programming concepts in **Python and C**
- Explaining complex concepts in a small group setting; grading assignments, and examinations while providing feedback
- Lead and assist TA sessions for primary TA, assisting professor and students with their weekly programming lab

Walmart

Toronto, ON

Digital & Efficiency AI Engineer

May 2022 – Aug 2023

- Collaborating with various teams such as Marketing, Finance, Replenishment, etc. to create an efficient promotions process via an **AI-based** approach using **AWS, React, and Python**
- Forging a diverse range of tools to compare different states of the Promotional Process of the company in **C++**
- Mobilizing the use of AI-reliant tools in the workplace by creating a **Neural Network** to complete price entries on flyers
- Working with the Data team to create a product recommendation tool aiding Merchants using **Keras & Tensorflow**

Max-Planck Institute

Hamburg, Germany

Research Associate / Software Developer

May 2021 – Aug 2023

- Cultivating a **GUI** for the University of Hamburg and MPI to use for virtual experiments at the University of Hamburg
- Creating a server-client-based application UI that handles client data/user frontend input via **HTML, CSS, and Tkinter**
- Coding in Python to create numerous protocol buffers to send and receive data to and from a server that handles requests
- Implementing an **SQL** database into a server-based system to handle several IP addresses, ports, and client data

Research / Projects

Discrete-Time Heavy-Anchor Reinforcement Learning in Multiagent Finite Games | Thesis

- Spearheading cutting-edge research into Nash Equilibrium-seeking techniques using Reinforcement Learning
- Utilizing techniques such as Q-Learning and Passivity-based Control in both continuous and discrete time to optimize convergence to stable Nash Equilibrium in hypo monotone games

Optimizing After-Hours Operation Room Scheduling for Sunnybrook Trauma | Paper

- Worked alongside Sunnybrook Trauma to create various models such as LSTMs, Sarima, Neural Prophet, and various regressions to predict trauma volume by hour and severity per day
- Implemented a real-time database & neural network that predicts trauma to an accuracy of 90% within +- 4 hours

Recidivist Predictor Project | github.com/rupink/Recidivism-Predictor

- Analyzed the COMPAS dataset historical data to examine the probability of an offender to commit another offense
- Examined the False Positive Parity of predicting recidivism based on race while excluding demographic information
- Created an Adversarial Learning Procedure to counter-predict against the initial regression model predictions

Price Tracker Web Scraper | github.com/rupink/Price-Scraper

- Created a user interface to interact with a system that automatically scrapes, tracks, and updates prices utilizing SQL
- Utilized React, Flask, and Playwright to create a UI for the user to interact with, and Bright Data to scrape values from Amazon

Relevant Modules: Pandas, OpenCV, Numpy, Matplotlib, Keras, JAX, Pytorch, OS, Tensorflow, ABC etc.

Open Source Contributions

Matplotlib Unit Testing | Pull Request | Python, SQL,

Nov 2023 - Dec 2023

Implemented unit testing for Matplotlib graphing methods such as 3D histograms and violin graphs.

Skills & Qualifications

- **Languages:** Python, C++, Java, C#, HTML, CSS, Batch, SQL, Powershell, Agile (Workflow)
- **Technologies:** AWS, Node.js, Express.js, DynamoDB, MySQL, Linux, Git, gRPC, Heroku
- Fluent in English, Intermediate in French and Hindi