

# Aymen Rumi

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## Education

McGill University, Faculty of Computer Science

Montreal, Canada | 2015-2020

Bachelor of Science: Major - Computer Science, Minor - Mathematics

## Legal Status

Dual Citizen (United States/Canada)

## Employment & Research History

### Project X – Machine Learning for Climate Change Research

Montreal, Canada | June - November 2020

- Represented McGill University in a multi-school research competition looking at machine learning methods to fight **climate change**
- Proposed novel **Deep Reinforcement Learning** model with **IoT**, and **cloud** technology for optimizing autonomous farming system.
- Analyzed potential reduction in water & energy consumption from proposed agent-based model through **predictive modelling**.

### CAE Inc. – Software Engineering Internship

Montreal, Canada | Summer 2018, May-August

- Implemented automated system testing features to CAE's Simfinity framework using **C++** & **C#** in an **AGILE** development team using **Git** version control
- Refactored tools allowing for better diagnosis, validation, and debugging of existing & future software functionalities.

**Highlighted Projects** - for more please visit Portfolio at: <https://aymenrumi.github.io/>

### Morris Water Maze Task

- Replicated results from a computational neuroscience paper studying neural mechanisms of spatial learning & memory, in **python**.
- Simulated a rat's spatial navigation system and memory-based coordinate system via **actor-critic network** using temporal difference learning; a model-free **reinforcement learning** method.

### Stock Sentiment Classifier

- Cleaned stock market news **text data** using lemmatization; Visualized histogram & word cloud based on distinct words by sentiment.
- **Machine learning** models trained on preprocessed text data - count & tf-id vectorization, using naïve bayes, support vector classifier, random forest classifier, & deep neural network. Visualized Confusion Matrix & ROC curve for each model.

### House Prices: Advanced Regression Techniques

- **Data analysis**: data cleaning with imputations, data preprocessing & **data visualization** done using **R**.
- Machine learning models i.e. multiple linear regression, decision trees, & deep neural network trained using k-fold cross validation with Python- **Scikit-Learn** & **TensorFlow** on **AWS** Sagemaker.

## Relevant Skill & Coursework

### Skills

#### Programming

Proficient: • Python • R • MATLAB • Java • C++ • C • SQL • Linux Commands | Familiar: • HTML • CSS • JavaScript • C#

Libraries/Tools: • Scikit-Learn • Keras • TensorFlow • PyTorch • Tableau • Plotly • Ggplot2 • Apache Spark • Git • Docker • LaTeX • RMarkdown

Languages: • English • French • Bengali

### Relevant Courses

Computer Science: • Algorithms & Data Structures • Software Design • Operating Systems • Database Systems

- Artificial Intelligence • Robotics & Intelligent Systems • Computational Biology Methods
- Applied Machine Learning • Brain-Inspired Artificial Intelligence

Math/Statistics: • Probability • Statistics • Ordinary Differential Equations • Introduction to Stochastic Processes • Numerical Computing

- Introduction to Statistical Computing • Honors Regression and Analysis of Variance • Introduction to Time Series Analysis

## Leadership & Extracurricular

### Bangladeshi Student Association - Co-President (2019-18) & Representative (2018-17)

McGill University | 2017-2019

- Led a student organization to promote Bangladeshi Culture at McGill University. Managed executive team and club operations.

### Intramural Basketball – Team Captain (Fall 2019)

McGill University | 2018-2020

- Helped contribute to team championship in Winter 2019 & was appointed role of Team Captain in Fall 2019.
- Learned to manage egos for good of a team, understand importance of defining team hierarchy & being effective in designated role.