

Some of the projects done while pursuing Masters degree in Applied Computer Science at Concordia

1. SOEN 6441: Advance Programming Practices (September 2018 - December 2018)

Topic: Board Game Risk

The project was to implement the classic board game Risk with an option to play against automated bots. The implementation was done in a group of 4 project members and the major challenge was collaboration among the team mates and the scale of the implementation code.

Technologies used: Java, MVC, Github

Repo: <https://github.com/rohitsharma06596/Soen-6441-Online-risk>

2. COMP 6581 Knowledge Based Systems (September 2018 - December 2018)

Topic: Implementing PROBLOG; a logic programming language based on PROLOG.

The objective of the project was to implement a few features of a logic programming language named PROBLOG. This is a special case for the classic logic programming version namely PROLOG. In addition to all features of PROLOG each fact had a probability associated with it. The project was done in a group of 4 and we implemented the features covering parsing of data types, Rules and facts along with their probabilities and their execution to derive inference.

Technologies: Java, Github

Repo: <https://github.com/rohitsharma06596/PROBLOGKBS>

3. COMP 6231 Distributed Systems Design (January 2019 - April 2019)

Topic: Centralized portal for managing books across different universities.

The implementation was done using Java Web Services API. The goal was to design a highly available, fail-safe distributed system, manage their replica and handle fault tolerance.

Technologies: Java, JAX-WS API

Repo: https://github.com/rohitsharma06596/Distributed_Library_Management_System

4. SOEN 691 Big Data Analytics (January 2019 - April 2019)

Topic: Online Shoppers' Intention Prediction.

This project was aimed at improving the prediction if a user would buy an item or would it be another case of shopping cart abandonment by enlarging the effect of negatively conditioning features. The data set was taken from UCI Machine Learning Datasets.

Technologies: Python, Apache Spark, numpy, pandas

Repo: <https://github.com/mehtajil131/Online-Shoppers-Buying-Intention>

5. COMP 6461: Computer Networks (September 2019 - December 2019)

Topic: Reimplementation of HTTP protocol to enable basic functionalities.

Few functionalities of HTTP protocol were created using the unreliable UDP along with implementation of both HTTP Client and HTTP file manager. We manually ensure the reliability of the transport on top of UDP protocol by implementing Selective-Repeat ARQ technique.

Technologies: Java

Repo: <https://github.com/rohitsharma06596/Assignment3>

6. SOEN 6751 Human Computer Interface Design (January 2020 - March 2020)

This project is to design and implement a self-adjusting smart graphical interface for C++ program development (IDE) using the GCC compiler (let's call it SmartGCC). The user interface had the adaptability to cope with a novice user, regular programmer and an expert user. The project was done in group of 4.

Technologies: Java, Swing

Repo: https://github.com/rohitsharma06596/HCI_SOEN6751_SmartGCC

7. COMP 6231 Machine Learning (September 2020 - December 2020)

A comparative study of deep learning methods for predicting stock market time-series data. Our primary motivation behind predicting the stock market was to create a model which can capture both the high level and low level details of a curve. The four of such measures which define these critical junctures in stock markets are bullish divergences, bearish divergences, overbought state and oversold state. As these dependencies could grow extremely long we are using different variations of RNNs for our predictions. Hence we began with LSTM, while training our LSTM model and defined our methodology for the hyper-parameter search. Then we finally trained a Gated Recurrent Unit model to define our methodology for the hyper-parameter search. All these models were finally evaluated in terms of the RMSE which elaborated on the high level detail capturing capacity of a model, and, the low level feature capturing capacity is verified using a evaluation metric defined by us, using the bullish and bearish divergences, RSI indicators and a curve similarity measuring technique. The project was done in a group of 2.

Technologies: Python, pytorch, numpy, pandas, scikit-learn

Repo: <https://github.com/rohitsharma06596/6321ML>