Brian Horner

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Available: Summer 2024, Fall 2024

EDUCATION

Northeastern University, Boston, MA — Expected December 2024
Khourny College of Computer Sciences
Masters of Science in Computer Science
Cumulative GPA: 3.56/4.0;
Relevant Coursework: Robotics Science and Systems, Intensive Computer Systems, Cloud Computing, Data Structures and Algorithms

BU-Metropolitan, Boston, MA — June 2022
Undergraduate Certificate in Computer Science
Cumulative GPA: 3.85/4.0;
Relevant Coursework: Computer Architecture, Data Science with Python, Data Structures and Algorithms

Suffolk University, Boston, MA — January 2019
Khourny College of Computer Sciences
Bachelor of Science in Government & History
Cumulative GPA: 3.2/4.0;
Relevant Coursework: Government Statistics, Physics, Programming for Engineers

WORK EXPERIENCE

Dunning, Kirrane, McNichols & Garner, LLP — Mashpee, MA
Paralegal — September 2020 - October 2022
- Overhauled the firm's commercial real estate transaction operations as part of a tandem with head attorney, increasing the processes efficiently, loan documents drafting accuracy, and lender satisfaction, which significantly increased the firm's loan acquisitions.
- Acted as the key transaction manager among all parties to ensure critical milestones were met to orchestrate prompt and satisfactory completion of loan transactions under stringent deadlines.

Bacco Ristorante & Bar — Boston, MA
Server & Bartender — September 2016 - June 2020
- Thrived in a fast-paced fine dining environment by skillfully managing customer requests and maintaining high standards of accuracy and efficiency through tenacious work ethic.
- Actively fostered a cohesive team environment with fellow servers, bartenders, hosts and kitchen staff by encouraging support and collaboration when possible, ensuring that customers were satisfied with every aspect of their experience in the restaurant.

Law Office of Iannella & Mummolo — Boston, MA
Paralegal — February 2019 - February 2020
- Successfully led a small team of paralegals ensuring the timely acquisition of essential medical documents crucial for cases of over 60 clients a month, strengthening their positions for social security applications and hearings.
- Worked closely with the head attorney to strategize and problem solve challenging cases in order to achieve successful results in difficult circumstances.

PROJECTS

Semantic Segmentation of 3D Point Clouds, (Singularity, Python, CUDA, Bash, Point-Clouds) — January 2023 - May 2023
https://github.com/NUPapers-Spring23/ColmapPipeline
A pipeline for the reconstruction of 3D Point Clouds using Colmap and CUDA on Compute Canada

- Conducted research and literature review of 20+ papers in order to identify new techniques to improve the process of **semantic segmentation of 3D Point Clouds**.
- Worked to develop a singularity container paired with **python and bash scripts** to increase the ease of using **CUDA** and **Colmap** for segmentation of 3D point clouds on Compute Canada's high-performance computing system.
- Collaborated with a group of 10+ researchers and faculty from University of Victoria and Northeastern toward the presentation and publication of novel ideas in the research space for **Canada AI Conference 2023**.

En Passant Magic Chess Set (Python, Multithreading, APIs, PyQt5) January 2024 - May 2024
Repository is private
A simulation chess board designed to demonstrate advanced control systems and API integrations for real-time synchronized gameplay with online chess platform Lichess.

- Created API connection interfaces with Lichess, enabling seamless integration between the simulation and Lichess games, including functionalities to synchronize the board with the current game state, execute moves from the simulation to the Lichess game and continually retrieve opponent moves for display in the simulation.
- Developed custom PyQt5 QRunnable threads classes featuring specialized slot functions for signal handling, facilitating both single-action and continuous interactions with the Lichess API, effectively circumventing PyQt5 limitations.

Partial MIPS Instruction Disassembler, (C++, Bitwise Masks & Shifts, MIPS Assembly) January 2022 - March 2022
https://github.com/BrianHorner-School-Work/CS472-Project1
MIPS Instruction Disassembler developed for computer architecture course.

- Developed a disassembly algorithm to interpret and convert 32-bit binary machine instructions into MIPS assembly language commands.
- Utilized bitwise masks and shifts to extract opcode, register operands and other essential fields in the instructions in order to return the MIPS instruction.

Formula 1 Mean Tire Predictor, (Python, Pandas, Machine Learning Algorithms) February 2022 - March 2022
https://github.com/BrianHorner-School-Work/CS677_Project
A project for predicting the mean tire usage of a Formula 1 race given weather conditions, tire allocation, safety car laps, race track, etc.

- Experimented with Random Forest, SVM, KNeighbors and Decision trees in order to find the best model for predictions
- Utilized pandas in order to match indexes, cut slices of data, label encoding, etc in order to successfully work with three datasets for predictions

Direct-Mapped Write-Back Cache Simulation,(C++, Bitwise Masks & Shifts) March 2022
https://github.com/BrianHorner-School-Work/CS472-Project_2
A direct-mapped, write back cache simulation developed for computer architecture course.

- Implemented a cache simulation in C++ with mechanisms for cache operations such as reading, writing and displaying the cache.
- Utilized bitwise masks and shifts as well as valid bits, tags, dirty bits in order to implement a direct-mapped write-back cache that follows the principles of Least Recently Used (LRU) and First in, first out (FIFO) replacement strategies

Image Manipulation Application, (Java, Java Swing, JUnit, UML Diagrams) Jan 2023 - May 2023
https://github.com/CS5010-Partner/CS5010-Assignment4
An image processing application with an interactive GUI interface that allows users to apply various manipulations to images

- Worked collaboratively with a partner to develop an image manipulation application in Java Swing, enabling users to interactively load, save and manipulate images through an interactive GUI.
- Implemented the following image manipulation operations, image blurring, image sharpening, image histograms, image dimensions, and image flipping.
- Conducted extensive unit testing with JUnit to ensure the reliability and robustness of the applications features and functionalities.

- Implemented diverse image color transformations such as greyscale, sepia tone, dithering, mosaic, luma images, and brightening.

Technical Skills

Programming Languages
- Proficient: Python, C, C++, Java, Racket
- Competent: Bash, Go, SQL

Tools and Platforms
- Proficient: Git, Linux, Conda, CMake Singularity Containers
- Competent: GDB, AWS, Juypter Notebooks

Libraries and Frameworks
- Proficient: Pandas, Java Swing, JUnit
- Competent: PyQT5, PyGame, OpenGL, SKLearn