Zach Comstock

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Skills

C, C++, C#, Python

Javascript, JSX, HTML-5

React, AngularJS, Telerik

SDL 2.0, OpenGL

SQL, mySQL, MongoDB

WinForms, WPF

Arch Linux, Ubuntu

Machine Learning, AI

Tools

GhostHub, Git, Tortoise CVS, TFS

Visual Studios, Vim

CLion, CMake

Club Work

Homebrew Computer Club
President, Founder

The Homebrew Computer Club takes on a new, interesting software project each semester, typically in an unfamiliar domain.

As president, my responsibilities include:

- Assessing club member's skills/interests to assign them to a corresponding team.
- Setting deadlines and managing teams to ensure the projects' timely completion.

Experience

Software Engineer Intern at Turner Studios (January - Present)

- Reverse engineer existing WCF services from a C# WinForms application into RESTful web services
- Develop React/Redux based front-end components to consume said services

Software Engineer Intern at Blizzard Entertainment (May - August 2017)

- Designed and created tools in C++ to gather and extract training data directly from the StarCraft II game engine
- Assisted with the development of Blizzard / Deepmind's public AI API (C++, ghosthub/CVS for version control)
- Designed and performed grid search and random search for tuning the hyperparameters of neural networks

Teaching Assistant at Kennesaw State University (August 2016 - May 2017)

- Taught students the concepts and implementation of various data structures in C++ (Linked Lists, Binary Trees, Hash Tables, etc...)
- Guided students through difficult assignments during scheduled tutoring hours
- Provided the professor with assistance and feedback during class time

Software Engineer Intern at Scientific Games (May - August 2016)

- Discussed and identified software, business, and development requirements for upcoming projects
- Used Microsoft's MVC framework (C#, AngularJS, HTML5, CSS) to develop fully functional web-based applications for tracking and predicting sales

Education

Kennesaw State University Kennesaw, GA
Bachelor of Science in Software Engineering, Fall 2018

Projects

Intel Z80 Compiler written in C++ (in progress)

Building a C Compiler for the Intel Z80. Taking a meticulous, top-down, test driven development approach, to prevent any major refactors and allow for easier debugging. Currently working the Lexer / Preprocessor / Parser. Project is hosted on github with cmake configured for CLion.

Space Invaders Emulator written in C (Fall 2017)

Built an Intel 8080 emulator written in C to run the original Space Invaders ROM. Used SDL 2 to handle graphics and user input.

Neural Network Library written in C++ (Spring 2017)

Created Custom C++ Neural Network Library and used it to implement handwriting recognition with the MNIST dataset. Uses sigmoid function for back-propagation.

Connect-R AI written in C++ (Fall 2016)

Connect-R is essentially a dynamic version of Connect Four, meaning you can have any combination of rows, columns, and win conditions. I applied the minimax algorithm to dynamically construct my AI's decision tree. I also added alpha-beta pruning to prevent the function from creating unnecessary branches and increase the AI's response time. The AI's heuristic was designed such a way that it will attempt to set up multiple paths to winning.