

ALEX SONG

alex@aysong.dev
(913) 449-6113
www.aysong.dev

RELEVANT COURSEWORK

Computer Networks
MAT21BC • Fall 2020

Computer Vision
EECS 442 • Fall 2020

Game Design
EECS 494 • Winter 2020

Operating Systems
EECS 482 • Fall 2019

Machine Learning
EECS 445 • Fall 2019

Web Systems
EECS 485 • Winter 2019

Computer Security
EECS 388 • Winter 2019

Data Structures &
Algorithms
EECS 281 • Fall 2018

Introduction to Computer
Organization
EECS 370 • Fall 2018

TECHNICAL SKILLS

C++
JavaScript
Python
Java
C#
SQL
Git
HTML
MATLAB
Unity

OTHER SKILLS

LaTeX
Graphic Design
Spoken Mandarin

EDUCATION

University of Michigan Ann Arbor, MI
B.S.E. in Computer Science
GPA: 3.9 / 4.0

2017 - Expected December 2020

TECHNICAL WORK EXPERIENCE

Amazon, Software Development Engineer Intern

Summer 2020

- Utilized AWS API Gateway and AWS Lambda to create backend to retrieve count data on Alexa customers
- Connected AWS Lambda functions to internal Amazon services to retrieve data on smart home routine JSON templates and customer information
- Created website to allow Amazon employees from other teams to easily write and validate recommended routine templates to recommend to customers and provide business intelligence to help with decision making
- Processed customer count data based on friendly name and appliance type

PROJECT EXPERIENCE

Bloom: Tome of Power | Wolverine Soft Game Studio

Summer 2020

Link to game: <https://wolverinesoft-studio.itch.io/bloom-tome-of-power>

- Collaborated with a team of 31 members to create a first person shooter game based on genre defining games under summer time constraints
- Designed physics engine to make movement realistic and allow for easily customizable jump height and fall speed
- Implemented game quality improvements such as speed ramp up and down and jump input buffers

Angel's Descent | EECS 494

Winter 2020

Link to game: <https://anjal494.itch.io/angels-descent>

- Collaborated with a team of 5 members to design and create a 2D dungeon descent game with procedurally generated maps
- Implemented algorithm to procedurally generate the map each floor by using binary space partitioning to create dungeon rooms and using prim's minimum spanning tree algorithm to connect the rooms with hallways
- Implemented game quality improvements such as health bar ghosts

Movie Poster Genre Classification Neural Network | EECS 445

Fall 2019

- Created a convolutional neural network using pytorch and numpy to classify the genre of movies using movie posters
- Utilized dropout and max pooling to prevent overfitting
- Trained and validated the model on a 10,000 poster dataset
- Visualized training and validation loss and adjusted model depth and number of neural nodes accordingly

Thread Library | EECS 482

Fall 2019

- Created C++ thread library including functionality for mutex, conditional variable, join and yield.
- Allowed for multithreading across many CPUs with an atomic guard variable
- Utilized context swaps to minimize busy waiting for user processes and only wait on kernel code.
- Increased efficiency by minimizing context swaps and sleeping waiting CPUs.

Wikipedia Search Engine | EECS 485

Winter 2019

- Created MapReduce server using master-worker able to run user-defined jobs. Allowed master-worker communication using sockets and implemented fault tolerance for worker deaths
- Indexed Wikipedia articles using MapReduce to allow scaling for more data
- Created REST API using python to return articles when given search terms and weight using TF-IDF and PageRank algorithm
- Utilized React framework to create frontend display for documents returned from search server and find further relevant articles upon clicking
- Deployed web application to Amazon Web Services EC2 nginx server