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Shayan Bathaee

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shayan-bathaee.github.io/Shayans-Portfolio

Education

University of California, Santa Cruz ***September 2019 – June 2023***

- ***Major:*** B.S. in Computer Engineering (System Programming Concentration)
- ***Minor:*** Computer Science
- ***GPA:*** 3.93 In-major, 3.94 Cumulative
- ***Programming Coursework:*** Computer System Design, Data Structures & Algorithms, OOP, Embedded Software, Programming for Arts, Assembly Language, Computer Architecture
- ***Engineering Coursework****:* Physics I–III, Calculus I–III, Discrete Math, Linear Algebra, Differential Eqs., Probability, Networks, Logic Design, Signals & Systems, Circuit Theory

Experience

Systems Engineering Intern ***Northrop Grumman*** ***June 2022 – August 2022***

- Made code revisions to MITRE's CICAT, a Python-based tool used for simulating cyber threats
- Upgraded CICAT to support 400% more threat data while increasing fault tolerance
- Wrote Python scripts to reconfigure thousands of ill-formatted threat data files and compile them into a single JSON file
- Automated threat actor input to significantly reduce the time it takes to use CICAT
- Documented the installation, use, and changes so cybersecurity teams at Northrop Grumman could efficiently use CICAT
- **Clearance Level:** Interim Secret (Currently being processed for Secret)
- **Leveraged Knowledge:** Python, Git, Batch, Cybersecurity, Confluence, Excel

Software Engineering Intern ***California Code Solutions*** ***March 2022 – June 2022***

- Independently developed an adventure game as an Android app for CACS – a startup company providing custom software
- Features the ability to save game progress on user devices with a login page at the home screen
- **Leveraged Knowledge:** Java, Android Studio, Git, Game Design

Physics Tutor ***UCSC Academic Excellence Program*** ***March 2021 – August 2021***

- Arranged my own tutoring sessions for groups of 1-5 students emphasizing collaborative problem solving
- Co-led problem-solving sessions for groups of 20+ students
- Taught concepts such as optics, waves, fluid dynamics, electricity, and magnetism

Software Projects - (More at github.com/Shayan-Bathaee)

Multithreaded HTTP Server: *(C)*

- Independently built a multithreaded HTTP Server capable of GET, PUT, and APPEND requests
- Built fault tolerant read/write functions with system calls
- Added read/write atomicity using pthread mutex locks

Machine Learning from Scratch: *(Python)*

- Built a Linear Regression algorithm using Gradient Descent
- Finds the line of best fit for a dataset and animates its progress using Matplotlib
- Can use any linear dataset from a spreadsheet as input

Image to ASCII: *(Python)*

- Converts any image into ASCII text art in Python
- Changes resolution, greyscales, and gets the hexadecimal color value for each pixel
- Maps the color value to a character set to determine which character should be displayed

Range Queries Using Self Balancing BST: *(C++)*

- Implemented an AVL tree and inserted every word in the English language
- Wrote a 1-D range searching algorithm to count the number of words within a range in logarithmic time

Six Degrees of Kevin Bacon: *(C++)*

- Constructed a graph to store actors as nodes and movies as edges
- Used BFS to return the shortest path between any two actors chosen by the user

Battleship - Embedded: *(C)*

- Co-programmed a battleship game on two hardware devices with LED displays, buttons, and potentiometers
- Used UART communication protocols to send checksums over a wired connection
- Designed multiple finite state machines for the hardware inputs and the game state

Technical Skills

- ***Proficient:*** Python, C, C++
- ***Familiar:*** Git, Bash, Make, HTML, CSS, JavaScript, Java, Assembly, MATLAB, Android Studio, Pandas, Matplotlib