Rrucha Singh

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EDUCATION

University at Buffalo — **Buffalo, New York**
BS Computer Science — *Expected Graduation: May 2024*
GPA - 3.79

WORK EXPERIENCE

University at Buffalo Computer Science and Engineering — **Buffalo, New York**
Undergraduate Teaching Assistant - (CSE 331 : Algorithms and Complexity) — *Aug 2022 - present*

- Introduce fundamental algorithmic concepts including graph theory, greedy algorithms, divide and conquer, dynamic programming and NP-completeness.
- Evaluate each student's knowledge on a topic and tailored feedback to match their level of comprehension.
- Reinforced students' understanding of algorithm design paradigms and proof techniques to analyse algorithms.

State University of New York Research Assistant — **Buffalo, New York**
Senior Research Aide — *Aug-Sep 2021*

- Collaborated with research team and established computer vision model to identify address on USPS mails
- Labelled 45k images to train model

PROJECTS

Dynamic Memory Allocator
(C programming language) — *Nov 2021*

- Implemented malloc, calloc and realloc - *pool allocator*, using multiple memory pools
- Allocations are served out of the smallest pool that supports the user's request, ranging from 32 bytes to 4096 bytes.
- Allocations too large for any memory pool are requested from the OS directly.
- For implementation used dynamic memory management, pointer manipulation, and pointer casting.

Conway's Game of life
(C programming language) — *Sep-Oct 2021*

- Implement a program that outputs the visualisation of the cycle of life and death between the current and next generation in a set of files
- Wrote methods using C arrays and references to arrays (pointers), including multi- dimensional arrays (2D and 3D) Operate as grid of cells
- Conducted on VMware (OS: Linux), in addition to using POSIX through the program GNU Emacs

Genetic Algorithm
(Scala) — *Mar 2021*

- Generated methods to imitate Darwin's Theory of Evolution to reach a correct solution through generations of variations
- Implemented recursive methods, took a function as a parameter, returned a function, and programs that use immutable types
- Wrote methods using recursion, first-order functions, immutability, and concurrency

Point of Sale
(Scala) — *Feb-Mar 2021*

- Developed a program to carry out four functions of calculator: addition, subtraction, multiplication and division of numbers
- Implemented the program using varying states formulated behaviour and without using any conditionals
- Wrote methods using Object Oriented Programming, abstract classes, concept of inheritance and polymorphism

Data Analyzer
(Python) — *Oct-Nov 2020*

- Created web application that reads the Buffalo 311 department request data from 2009 to 2020
- For Implementation made core function to decipher and process data from the csv files for the plotted points.
- Wrote methods using Python Bottle library for the framework of the web server and applied Plotly open source graphing Javascript library to illustrate graphs on the front end

LEADERSHIP EXPERIENCE

UB Hacking — **University at Buffalo**
Logistic Lead (Part of the Organising team) — *Jul 2021 - present*

- Managing, Ordering, handling and distributing all supplies and merchandise such as SWAG items, T-shirts
- Planning and Coordinating with the setup and distribution of supplies/ food
- Aiding and resolving any conflicts that arise

UB School of Engineering and Applied Science — **University at Buffalo**
Peer Mentor — *Sep 2021- May 2022*

- Mentored Five diverse - First Generation College students.
- Motivated and Assisted students in terms of social, professional, and on-campus issues.

SKILLS

Skills: CSS, HTML, javascript, python , C programming, Scala, Object Oriented Programming, Microsoft Excel, Proficient in Word and PowerPoint, gdb, assembly language