Yash Agarwal

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Education

University of Bristol — **Bristol, UK**
BSc in Computer Science — 2017-2021
- Classification - **2:1** Honours.

St. James' School — **Kolkata, India**
A Level Equivalent - [ISC : Indian School Certificate] — 2012-2016
- Computer Science (94 %)
- Mathematics (92 %)
- Chemistry (88 %)
- English (88 %)

Work Experience

University of Bristol — **Bristol, UK**
Teaching Assistant in Department of Computer Science — 2020-2021
- Achieved one of the top grades in computational neuroscience course as a student and returned as a teaching assistant for the course.
- Created content and improved lab sheets for students to work through.
- Led online video seminars to deliver course material and troubleshooting guidance to students.
- Mentored students to achieve their academic goals and encouraged industrial pursuit in the field.

66 DAYS (through University of Bristol) *(link)* — **Bristol, UK**
Software Engineer — 2018-2019
- Worked in a 4 person team for an individual business owner based in Bristol.
- Created the Android and iOS versions of a habit tracker app for a healthy lifestyle and weight loss management using Git with an Agile workflow.
- Designed a basic MySQL based database for the app and hosted the application on the Oracle Cloud.
- Set-up the Nginx server with some guidance and played a role in developing the backend website framework.

Shakti Carriers Ltd — **Kolkata, India**
Intern — 2016-2017
- Learned how a logistics business operates from the floor level up-to the senior management.
- Maintained a portion of the company books using Accounting softwares like Tally & Excel.
- Supervised logistics operations and learned to deal with unforeseen circumstances.
- Assisted in marketing & advertisement and explored new strategies to grow the company.

Save the Children NGO — **Kolkata, India**
Lead Volunteer for Each One Teach One Project — 2013-2016
- Played a role in setting up the project, which was a collaboration between the NGO and students of St. James' School.
- Created content, taught Maths & English to underprivileged children who cannot afford education.
- The project caught the attention of F1 world champion Lewis Hamilton, who paid a visit in 2013 and was impressed by our initiative and effort towards the project.

Programming Skills

- Python.
- C, C++, C#.
- Java.
- SQL.
- HTML, CSS, Javascript.
- **Concepts** : Object Oriented Programming (OOP), Message Passing Interface (MPI), Agile & Waterfall development process.

Software Skills

- Git.
- MySQL, Oracle Cloud.
- Autodesk Maya, Unity 3D.
- Remote Work SCP/SSH.

Languages

- **English** : Native speaker.
- **Hindi** : Native speaker

Relevant Projects

Virtual Reality Action Game *(link)* — 6 person team

Built a two-player naval battleship game from scratch on Unity 3D.

- VR feature of the game was based on Oculus Rift technology.
- Project was built using Agile development process supported by extensive usage of Git and techniques like paired programming, workflows and sprints.
- Designed all the initial movement mechanics of the game by coding scripts in C#.
- Designed nearly all of the model assets of the game using Autodesk Maya, which gave an industry standard look to the game.

Image Recognition Software *(link)* — 2 person team

Built a software using C++ that detects dartboards and human faces in images.

- Trained the classical Viola-Jones framework provided by OpenCV library to successfully detect human faces and dartboards.
- Improved the performance of dartboard detector by combining the Viola-Jones framework with personal implementations of various edge and shape detection methods.
- Implemented edge detection using Sobel operator, gradient extraction via filtering and shape detection using Hough transforms - hough lines, hough circles.

Simulation of Neuron models *(link)* — Individual

Built computational simulations of numerous single layer neuron models using Python.

- Achieved one of the top grades in class for this project.
- Simulated a Binary Hopfield network which stores three patterns and evolves in accordance with the McCulloch Pitts formula.
- Simulated Spike trains using poisson process and computed fano factor and spike triggered averages.
- Simulated the Leaky Integrate & Fire neuron model and demonstrated Spike Timing Dependent Plasticity (STDP).

High Performance Computing *(link)* — Individual

Programmed software in C using the University of Bristol's 600 teraflop supercomputer - Blue Crystal phase 4.

- Applied serial optimisations like compiler choice, compiler flags, data layouts, data types, vectorisation, etc to improve performance of a 5-point stencil code run on a single CPU core.
- Programmed a multi-threaded application using Message Passing Interface (MPI) and Single Program Multiple Data (SPMD) which was run on one core up to all the 56 cores of 2 compute nodes.
- Message Passing Interface (MPI) protocol was used to achieve point-to-point communication among processes.
- Single Program Multiple Data (SPMD) approach was used to achieve distributed memory parallelism.

More Projects

- Computer Graphics - 2 person team *(link)*
- Concurrent Computing - 2 person team *(link)*
- Automated Stock Trading Algorithm - individual *(link)*
- CGI Robot Modelling - individual *(link)*
- Interior Design Project - supervised a team of approximately one hundred people *(link)*