

# Yash Kumar Agarwal

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## Education

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### University of Bristol

#### BSc in Computer Science

- Classification - 2:1 Honours.

Bristol, UK

2017-2021

### St. James' School

#### A Level Equivalent - [ISC : Indian School Certificate]

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|---------------------------|--------------------|
| - Computer Science (94 %) | - Chemistry (88 %) |
| - Mathematics (92 %)      | - English (88 %)   |

Kolkata, India

2012-2016

## Work Experience

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### Shakti Carriers Ltd

#### Associate Manager

- Grew the quarterly revenue of the company by 15% from implementing new growth strategies.
- Led marketing and critically analysed market data to develop new investment strategies.
- Maintained a portion of the company books using Accounting softwares and Excel.
- Supervised business operations and was responsible for crisis management.

Kolkata, India

2021-2022

### University of Bristol

#### Teaching Assistant in Department of Computer Science

- 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.

Bristol, UK

2020-2021

### 66 DAYS (through University of Bristol) ([link](#))

#### Software Engineer

- 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.

Bristol, UK

2018-2019

### Save the Children NGO

#### Lead Volunteer for Each One Teach One Project

- 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.

Kolkata, India

2013-2016

## Programming Skills

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

## Software Skills

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

## Languages

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

## Relevant Projects

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### 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.

### 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).

### 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.

## More Projects

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- 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 [\(link\)](#)