Vishal Jain

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An aspiring PhD student with a diverse background in Physics and Computer Science, I have honed my skills through academic excellence and practical experience in image analysis and machine learning. My robust foundation in data analysis, deep learning, and a proactive approach in leading innovative projects makes me a strong contender for collaborative research endeavors.

EDUCATION

University of Cambridge - Wolfson College   Oct 2023 — Jul 2024
MPhil Data Intensive Science
- Course content includes: High performance research computing, Supervised and unsupervised machine learning, Deep learning, Classical and Bayesian statistics, Image analysis, Medical Imaging

University of Bath   Oct 2018 — Jul 2022
BSc (Hons) Physics with industrial placement
- First Class (84%) - Placed 2/67 in cohort
- Chancellors award for best final year undergraduate (across the university) – Top 5 shortlist
- Dissertation topic on modelling the nonlinear dynamics of cardiorespiratory synchronisation (publication in progress)
- Relevant Modules: Computational Astrophysics (88%), Intro to computer graphics (80%) and Computer vision (79%)

Kings College London Mathematics School (KCLMS)   Sept 2016 — Jul 2018
- A-Levels: A*A*A* in Mathematics, Further Mathematics and Physics (4th highest across year group)

EXPERIENCE

Perspectum   Oxford, UK
Imaging Scientist II   Jan 2023 - Sept 2023

- Led the creation of a new diverse dataset for 3D pancreas segmentation. Trained and validated a deep CNN (UNet). Compared model performance against radiologist and found results to be comparable with the observed inter operator variability. Submitted an abstract to the European Congress of Radiology (ECR) 2024 as lead author detailing findings.
- Spear headed development of several new in-house workflows to improve the efficiency of creating image segmentation models. Wrote custom scripts to break down datasets by scanner manufacturer and field strengths. Introduced active learning annotation workflows via the open source library MONAI Label. Standardised model training and validation pipelines across the different inhouse RnD teams to AWS Batch and integrated pipelines to work with MLflow.
- Developed and implemented a structured onboarding program for a new intern, including hands-on training sessions and weekly 1:1s.

Perspectum   Oxford, UK
Intern Imaging Scientist   Sept 2020 - Sept 2021

- Implemented and trained a deep convolutional neural network (UNet) in PyTorch to segment cross sections of the aorta out of 2D Cine MRI data to calculate aortic distensibility. Proposed use of a circularity score to clean dateset as well as QC model's segmentations. Score proved to be a key indicator of clean data and high quality segmentations.
- Researched and implemented ways to improve model robustness by reading current academic papers on the subject. Found applying gaussian and salt and pepper noise augmentations during training improved model performance on cases featuring more severe acquisition distortions. Increased number of segmentations passing QC by 20-30%. Investigated use of shape based priors in devising a custom loss function.
- Built a pipeline to homogeneously stitch MRI body block volumes together. The entire pipeline was built in python and packaged as a GUI via pyQT5 and a container via docker. The method was validated against 1500 cases, acquired from GE, Philips and Siemens scanners at 1.5T and 3T.

Seccl   Bath, UK
Digital Academy intern   Jun 2020 - Aug 2020

- Worked in a team of 4 to pitch an idea for a new fintech start up to a group of VC's. Idea was to create a new investment game, Diego. Full branding, unit economics and market research done to test viability of idea.
- Learnt about the core areas of a modern SaaS business: Product, customer, finance, development.

PROJECTS

Snake AI
Project Link: `https://github.com/VishalJ99/snakeAI`   Jan 2023

- Wrote code to implement deep Q learning based reinforcement learning algorithm using PyTorch to train an AI to play snake.

SKILLS

- **Programming Languages**: Python (Proficient, 3 years of industrial level experience), C/C++ (Familiar, 1 year of experience via university projects), JavaScript (beginner, <6 months of experience via university and internship projects)
- **Specialised Tools and Frameworks** Git, Docker, AWS, Linux, PyTorch, PyQT, openCV, MONAI, Selenium and Appium.
- **Languages:** English (native), Hindi (fluent).

EXTRA CURRICULARS

Secretary of Bath University Burban (break and urban) dance society   Jun 2021 - Jun 2022

- Took charge of writing digestible and concise meeting minutes
- Coordinated weekly with individual committee members to track progress on action plans and communicated updates to the society chair.
- Responsible for managing room bookings, events and inter society/university communications for one of the most active societies at the university.

Chair of Bath University Yoga society   Jun 2019 - Jun 2020

- Drove society's growth by planning inter society socials and workshops to reach a larger audience.
- Ensured committee meetings ran smoothly by setting a clear agenda and delegating tasks beforehand efficiently.
- Tackled societies debt by identifying redundant classes, restructuring the time table and class pricing packages.
- Raised 15% more during freshers week in comparison to the previous year as well as reaching more people. Ended the year with a positive balance sheet and more members than the prior year.

Social Secretary of Bath University Jiu Jitsu society   Jun 2019 - Jun 2020

- Planned over 20 socials for one of the largest university jitsu communities in the UK.

Treasurer of Bath University Comedy writing and improv society   Jun 2019 – Jun 2020

- Managed society's accounts and budget for our seasonal shows.