Scott Brooks
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Education

IBR MRCDTP PhD Student, University of Warwick **2020 – 2024**

Project: Machine learning for predicting cellular states in 3D lattice light sheet microscopy.

MEng Computer Science, University of Warwick **2016 – 2020**

Achieved Grade: First Class

Dissertation Sized Group Project (Year 4): Developing a learning app for British Sign Language (BSL), which features a translation and verification component utilising 3D Convolutional Neural Networks.

Dissertation (Year 3): Implementing an Artificial Endocrine System for Mobile Robot Control - This involves simulating the biological hormonal system to optimise the mapping and hazard evasion process.

A-Level, Rainham Mark Grammar School **2009 – 2016**

Mathematics (A*), Further Mathematics (A), Economics (A),
AS Physics (A), AS Financial Studies (A) Extended Project (Economics) – A

Work Experience

Senior Graduate Teaching Assistant, University of Warwick **2021-Present**

- Led a variety of Computer Science undergraduate seminars, ranging from intro coding java modules to master's level computational Biology. This involved being able to communicate technical concepts to students with a wide range of abilities, whilst managing the other assistants in the labs. Marking coursework to a high standard on tight deadlines and generating statistics to determine whether moderation is required.

Tax Intern, Deloitte UK **July-August 2018**

- Completed a 6 week internship within the Energy and Resources Corporate Tax Department. Responsibilities included assessing engagement letters and data processing, but also independent technical research, and interpreting financial legal legislation.
- Gained experience in one of the largest professional services firms, working under pressure to produce high quality deliverables. This included presentations which were used to attract new clients to the firm and inform partners on the current state of regulation within the oil and gas industry.

Technical Skills

Programming Languages: Python, Java, MATLAB, C, Haskell, Kotlin, HTML/CSS, PHP, SQL, JavaScript, R

Software : Microsoft Office, LaTeX, BibTex, Fiji, SlideBook

Microscopy: Lattice LightSheet Microscopy, Spinning Disk Confocal, Widefield, Brightfield

Biology: Tissue culture, Live and fixed sample preparation for imaging

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Positions of Responsibility

Warwick Marrow **Oct 2017 - March 2023**

Worked as a volunteer for marrow (the student lead branch of Anthony Nolan - a charity that helps save the lives of people with blood cancer), helping out at both fundraising and sign up events. Have held various positions on the committee including Social Secretary, Postgraduate Officer and President, overseeing all aspects of operation and leading Warwick Marrow to sign up 550 people to the stem cell register in just the first term of university. This has also involved approaching and conveying complex information to members of the public.

Professional Projects

CelFDrive - Python, MATLAB

CelFDrive is a tool to partially automate advanced microscopy methods. Employs state of the art deep learning techniques to identify cells in different stages in mitosis in a larger, lower resolution field of view. CelFDrive directs the microscope to the cell of interest, then switches imaging mode in order to generate high resolution movies. This project is partnered with Intelligent Imaging Innovations (3i) and integrates their microscope control software SlideBook with MATLAB and Python. Alongside this a set of user interfaces to help retrain models has been developed with ipywidgets.

Deconvolution Pipeline - Python

Developed an Python-based pipeline for processing Lattice LightSheet Microscopy data, involving deskewing, noise filling, and Richardson-Lucy deconvolution, significantly enhancing image resolution and usability for later analysis.

Design of Information Structures Coursework - JUnit

Designed and implemented a comprehensive JUnit test suite for a Java-based coursework project focused on building movies, credits and actors data structures systems. Ensured the test suite rigorously evaluated the functionality, efficiency, and robustness of students' implementations.

Conference presentations

ELMI June 2024 - Liverpool

Invited to talk about CelFDrive project and the future of AI-driven microscopy.

Actin December 2022 - Bristol

3D-Segmentation of Dictyostelium captured with light sheet microscopy.

Personal Projects

VolleyBooker - Automated Web Interaction and Data Entry Bot

Developed a Python-based automation tool leveraging Selenium WebDriver to interact with the University Gym website for booking oversubscribed volleyball sessions at specific times. The project involved automating browser navigation and handling dynamic web content.

BookShelfSearch - iOS Application [not published]

Created an iOS application to assist users in locating books on shelves. A user creates a Wishlist of books they would like and uses Optical Character Recognition to highlight any books present within the image. Developed natively in Swift using Xcode using Apple’s Vision Framework.

References available upon request.