

Jack Prince-Fulls

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I am a research scientist/engineer at InCyan, where I work on developing scalable machine learning systems, primarily for large-scale text and image data. I am currently looking to transition to working on AI safety, with a focus on mechanistic and developmental interpretability. I am motivated, quick to learn and enjoy a challenge and am great at working both individually and in a team. I hold a first-class degree in Physics (MPhys) from the University of Bath (2020) and since then have worked in industry. My professional experience has reinforced my passion for research and I am now eager to utilise my strong skill set to pursue research in AI safety.

Education

University of Bath, Master of Physics (MPhys) Oct 2016 – Jul 2020

- **First Class Honours (Overall Programme Average: 76.23%)**

Exeter Mathematics School September 2014 – July 2016

- **A levels:** Mathematics - A*, Further Mathematics - A, Physics - A
- **Exeter Mathematics Certificate:** A unique qualification designed to develop research, communication and presentation skills through various research projects.

Exeter College September 2014 – July 2016

- **BTEC Level 3 Subsidiary Diploma:** Music Performance - Distinction*

Research Experience

Research Scientist/Engineer, InCyan – Bath Aug 2020 – Present

- **Developed scalable ML systems:** Led the research and development of advanced machine learning systems for processing large-scale text and image data, focusing on optimizing performance and ensuring robustness. These systems are now utilised by high-profile digital asset companies.
- **Designed and trained machine learning models:** Developed custom transformer networks and other machine learning models to solve complex problems such as obfuscated asset matching.
- **Fostered a holistic approach to ML systems design:** Combined theoretical research, empirical evaluation, and practical deployment to develop cutting edge machine learning systems that met business objectives.
- **Researched and implemented advanced web scrapers:** Conducted research into bypassing sophisticated bot mitigation. Developed proof of concepts which were subsequently scaled to scrape millions of URLs.
- **Demonstrated strong ability in autonomous working:** Pioneered the company's research and development efforts, initially working as the sole UK team member, helping to establish foundational processes and systems whilst reporting directly to the CEO.
- **Quickly and independently acquired and applied knowledge:** Conducted self-directed study to develop software engineering and machine learning expertise from the ground up.
- **Cross-functional teamwork:** Engaged with other teams to ensure ML solutions met business objectives and integrated seamlessly into production systems.
- **Proactive problem-solving:** Identified and resolved key challenges in ML deployment pipelines, improving overall reliability and scalability.
- **Published internal research insights:** Authored and presented detailed literature reviews, technical reports and analyses used for informing business decisions.
- **Communicated complex research effectively:** Presented complex machine learning concepts and research findings to diverse audiences—including both technical teams and non-specialists—through talks, demonstrations, and collaborative meetings, ensuring clarity and engagement.

MPhys research Project, University of Bath – Bath Aug 2020 – Present

Project Title: Using 3D Printing to Realise Ball-and-Spring Metamaterial Designs

Supervisors: Dr Anton Souslov (Primary) and Dr Richard Bowman

- **12-week full time research project:** Centred around finding an inexpensive method of fabrication for theoretical ball-and-spring metamaterial designs.
- **Introduced novel printing support methodology:** Developed a novel support method dubbed "hybrid support" for printing sparse lattice structures. By repurposing stringing, a common problem when 3D-printing soft materials, we were able to print larger, more detailed lattice structures on hobbyist grade 3D printers.
- **Cross-discipline collaboration:** This project lay at the interface between theoretical physics and practical application and required a firm grasp of both to succeed. We collaborated with academics in both the Physics and Engineering departments to push the project further than would have been possible alone.
- **Time management:** Effectively managed time in a research setting, setting goals and distributing work between team members.
- **Communication skills:** Presented findings through a written report and oral presentation, concluded by defending the work in a viva voce.

Short Courses

Introduction to Machine Learning - MIT Open Learning Library - Online August 2021 - October 2021

- Introduction to the principles, algorithms and applications of machine learning.
- Covered the basics of machine learning from linear separators to neural networks and reinforcement learning.

Faraday Institute of Science and Religion Summer Course - Lucy Cavendish College - University of Cambridge June 2019 – July 2019

- A one week residential hosted by the Faraday Institute of Science and Religion
- Included a one day science communication workshop with the goal of improving the participants ability to share complex scientific, theological and philosophical ideas to a wide range of audiences.
- Aimed to equip its attendants with a greater knowledge of the interface between science and faith with daily lectures from prominent scientists and biblical scholars.

A Literary Pilgrimage to Christian Oxford - Summer School - Wycliffe Hall - University of Oxford June 2018

- A one week summer school hosted by Wycliffe Hall.
- Daily lectures and discussions from leading experts on the great Christian literature associated with Oxford including works by C.S. Lewis, Dorothy Sayers, J.R.R. Tolkien and T.S. Eliot.

Activities and Interests

Playing Guitar in Local Jazz Bands and Church.

My involvement in music has honed my skills in performance and ability to adapt to different settings. When performing jazz both the song structure and many of the parts are often improvised rather than pre-planned. Seamless communication between the band members is vital to maintain a smooth performance. In contrast, playing in church requires discipline to follow rehearsed arrangements whilst maintaining awareness to follow the band leader in spontaneous sections.

Cooking

Since my time at university, I have developed a passion for cooking. I love bringing people together over food and conversation and have started a supper club with some of my friends. I especially enjoy discovering and sharing new flavours and finding new ways to use them. This has allowed me to further develop my patience, determination and creativity as I refine my skills through trial and error.

Skills

Languages: Python, SQL, Bash, JavaScript, HTML, CSS, XPath, C, C++ , MATLAB, Maple

Machine Learning Frameworks: PyTorch, TensorFlow, Scikit-Learn, Hugging Face, OpenCV, TransformerLens

Systems and Deployment: Docker, BigQuery, Playwright, AsyncIO, Multi-threading, Git

Research and Communication: Technical writing, presenting research to diverse audiences, cross-disciplinary collaboration