

Nicholas Pritchard

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Google Scholar Page: <https://scholar.google.com/citations?user=liiPddQAAAAJ>

Summary

Highly motivated machine learning scientist, software engineer and current PhD candidate in machine learning and neuromorphic computing, specialising in deep learning, scalable AI and real-time anomaly detection. Experienced in computer vision (auto-encoders, semantic-segmentation), hardware-aware ML (neuromorphic AI), large-language models (LLMs) and large-scale model training (multi-GPU, HPC). Strong background in Python, PyTorch and TensorFlow with experience in model deployment and distributed computing. Passionate about leveraging cutting-edge research to build innovative solutions for complex problems and push the limits of computing.

Skills: Python, PyTorch, LLMs, Vector Embeddings (pgvector), Computer Vision, Docker, Kubernetes, TensorFlow, OpenCV, Git, SQL, C/C++, Anomaly Detection, Django, HPC, MPI, Neuromorphic Computing

Education

University of Western Australia (UWA)	Perth, Australia
PhD in Computer Science and Physics (Westpac Future Leaders Scholar)	February 2023 – Feb 2026
MPhil in Physics (Funded by Australian Research Training Program (RTP) stipend)	March 2019 – May 2021 Awarded October 2021
BSc with Honours in Computer Science and Software Engineering (Valedictorian)	March 2018 – November 2018 (WAM: 84%, GPA 7/7)
BSc Engineering Science, Computer Science	February 2015 – July 2018 (WAM: 83.5%, GPA 6.7/7)
Wesley College	
Western Australian Certificate of Education	November 2014 (ATAR: 97.55)

Experience

PhD Research – University of Western Australia

February 2023 - June 2026

- Developed deep learning models for Radio Frequency Interference (RFI) anomaly detection using CNN auto-encoders, optimised for low memory usage.
- Reinterpreted image-domain segmentation problem to time-series segmentation, achieving state-of-the-art RFI detection performance with a novel SNN approach at 98% energy reduction.
- Trained large-scale ML models (multi-GPU, HPC) with PyTorch Lightning, optimising for inference efficiency.
- Collaborating with SynSense AG to train and deploy models to neuromorphic hardware, bridging research and production AI.
- Research funded by a highly competitive Westpac Future Leaders Scholarship.

Co-Founder – Cohesion Technologies

February 2023 – Present

- Developed and deployed an AI-driven SaaS product, managing the full software development lifecycle, leveraging Django, OpenAI APIs and cloud deployment tools (Docker, Fly), achieving 99.99% uptime with live users.
- Built retrieval-augmentation generation (RAG) pipelines, and fine-tuned LLMs, integrating OAuth2 authenticated data-stores and user-provided data with pgvector embeddings in managed SQL database environments.

Software Engineer – International Centre for Radio Astronomy Research

August 2021 – December 2022

- Developed a high-performance computational workflow management system for the Square Kilometre Array (the world's largest radio telescope) in a large-scale international remote-first cross-disciplinary collaboration of several teams. This workflow system is built to handle PB-scale datasets using Python, Kubernetes and MPI.

Research Officer – University of Western Australia

August 2021 – December 2021

- Developed and deployed a deep learning and computer vision solution for roadside object tagging over the entire Perth metropolitan area using OpenCV, TensorFlow, CNNs and Yolo models.

Teaching Assistant – University of Western Australia

October 2017 – August 2021

- Assistant Lecturer in High-Performance Computing (2019): Created and delivered 12 hours of lecture material on distributed scientific computing including MPI and Apache Spark to around 200 students. Additionally, I authored two assignments and a final exam, liaised with laboratory demonstrators and fielded student enquiries.
- Laboratory demonstrator for Systems Programming (2021), Data Structures and Algorithms (2021), Machine Learning (2019, 2020, 2021), Computer Networking (2019) and Computer Analysis and Visualisation (2017) courses.

Industrial Trainee – CSIRO Kensington

November 2017 – February 2018

- Designed, implemented, tested and presented a high-performance simulation code for a quantum computing algorithm using C, Intel MKL libraries and MPI.

Casual IT Administrator – Thermal Systems Combustion Engineering Pty Ltd

November 2015 – January 2018

- Designed, budgeted, installed and maintained IT solutions for a specialised engineering firm.

Volunteering

UWA Programming Competition Society

March 2019 – March 2021 President

March 2018 – March 2019 Vice President

- Led a committee of eight students over two elected terms. Delivered at least 30 open lectures to students. Managed hundreds of members and a website accessed by students from multiple universities and high schools. Coordinated planning and managing at least 40 events, including charity fundraising and collaboration with other student clubs.

Coders for Causes

September 2016 – September 2017 Inaugural Ordinary Committee Member

- Helped grow a new student club as part of its first committee to deliver pro-bono software development for non-profit groups.

Achievements

Blackbird Foundry

October 2023 – December 2023

- Selected to participate in Blackbird's deep-tech pre-accelerator program. Investigated 'Perizotic Computing' - A hybrid neuromorphic / ANN accelerator for Earth Observation.

CSIRO OnPrime

November 2020 – January 2021

- Took part in a startup pre-accelerator program investigating the use of writing and reference management tools in academia.

International Collegiate Programming Contest

November 2017

- Represented UWA at the South Pacific Regional Finals held at the University of New South Wales, achieving 10th place.

Study Abroad Exchange, USA

January 2017 – May 2017

- Recipient of competitively awarded study-abroad scholarship to study computer science abroad at the University of Urbana-Champaign, Illinois, USA.

Referees

Available upon request