

Luke G.M. Oakden

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EDUCATION

University of Queensland

Bachelor of Mathematics / Bachelor of Computer Science

Mathematical physics major + physics minor / machine learning major

Brisbane, QLD

January 2021 - June 2025

ACADEMIC INTERESTS

My core academic interest lies in the rigorous application of pure mathematics to the frontiers of artificial intelligence and machine learning. I am passionate about designing, analysing and implementing advanced machine learning techniques that learn effectively from large datasets. This approach emphasises the use of deep mathematical theory to improve model performance by incorporating information from the underlying behaviour. I am keenly interested in the entire AI pipeline, from data collection to the rigorous analysis and application of advanced models and techniques. My expertise extends to both statistical learning and geometric deep learning, enabling me to tackle specialised challenges in extracting meaningful insights from high-dimensional data. I also have a strong interest in the integration of optimisation and simulation techniques within AI frameworks, particularly for developing and deploying high-performance models that demonstrate robust, generalised performance. My ultimate goal is to provide accurate insights and predictive capabilities in dynamic, data-rich scientific and engineering environments, such as high-performance sailing.

TECHNICAL & MATHEMATICAL COMPETENCIES

Artificial Intelligence & Machine Learning: Proficient in designing, developing, and deploying advanced machine learning and deep learning models to address complex data challenges. Expertise spans key areas including predictive modelling, pattern recognition, and performance analysis. Various frameworks and libraries are available at hand, such as PyTorch, TensorFlow, JAX, and scikit-learn. My experience covers diverse methodologies including regression, classification, clustering, reinforcement learning, Convolutional Neural Networks (CNNs), Transformers, and generative models.

Mathematical Modelling & Data Analysis: Leveraging a strong foundation in linear algebra and other advanced mathematical concepts to construct rigorous models for physical systems analysis and prediction. Highly proficient in data analysis and manipulation using NumPy and Pandas, crucial for effective data collection and pipeline preparation.

Optimisation, Simulation & Scientific Computing: Skilled in developing and implementing robust numerical simulations and high-performance computational solutions using Python (SciPy, NumPy) and MATLAB. I have extensive experience in optimisation, applying operations research techniques (Linear Programming, Integer Programming, Dynamic Programming) and tools (Gurobi, Python) to identify optimal solutions for design parameters and strategic decision-making.

Programming & Tools: Python, Java, MATLAB, R, C (embedded systems), PyTorch, TensorFlow, JAX, scikit-learn, Pandas, NumPy, SciPy, Mathematica.

EXPERIENCE

IT Systems Migration Technician

DWW Engineering

November 2024 – Present

Darra, Queensland

- Planned and managed full migration from Windows SBS 2011 and Exchange Server 2010 to Microsoft 365, including Exchange Online and SharePoint.
- Configured and deployed SharePoint sites for document management, user access, and team collaboration.
- Transferred all company data to cloud infrastructure (company data to SharePoint sites, personnel files to OneDrive), enabling server decommissioning.
- Provided end-to-end IT support, including remote troubleshooting, user onboarding, account management & recovery, and security configuration.
- Installed and configured secure wireless access points (WAPs) across workshop sheds to extend reliable network coverage.
- Provided ongoing remote IT support and systems administration across Windows workstations and cloud services.

Java Software Developer – Sail Design Tools

UK Sailmakers

June 2023 – July 2023

Darra, Queensland

- Collaborated with sail designers to tailor features for practical use in racing sail production.
- Migrated legacy Objective-C codebase of PlotMaker by SailScience to Java for improved maintainability and cross-platform support.
- Integrated Java application with industrial laser cutting hardware to automate the plotting and cutting of high-performance sail fabrics with precision.
- Redesigned and extended the user interface to support advanced sail geometry layouts, nested plotting, and optimized material usage.
- Implemented geometric data handling and path-optimisation routines using Bezier curve manipulation and pathfinding algorithms to minimise material waste and cutting time.

IT Support Technician

June 2022 – January 2023

Wiredlans

Woolloongabba, Queensland

- Contributed to Microsoft 365 onboarding for new clients, including domain consolidation, email & Office migration, and Teams integration.
- Managed cloud migration tasks involving user accounts, mailboxes, and shared drives to Exchange Online and SharePoint.
- Delivered Azure-related support, including virtual machine provisioning, physical-to-cloud migration, and basic tenant configuration.
- Handled technical support tickets via Jira across a wide range of issues including: Office 365 application errors (Outlook, Teams, Excel, etc.), printer and peripheral troubleshooting, other software licensing and access errors, SharePoint access and permission issues
- Conducted employee onboarding/offboarding: device provisioning, email/account setup, login credential issuance, and deprovisioning.
- Installed and configured IT infrastructure solutions including Wi-Fi networks, routers, VoIP systems, and client communications setups.
- Provided remote and on-site support for hardware, OS, and network issues across Windows and Linux environments.

High School Maths Tutor

August 2021 – October 2021

Casual

Brisbane, Queensland

- Provided one-on-one tutoring for Year 12 students in Mathematical Methods and Specialist Mathematics in preparation for QCE external examinations.
- Delivered conceptual and problem-solving support aligned with the QCAA senior mathematics curriculum, including calculus, probability, and statistics (Mathematical Methods); and vectors, complex numbers, functions and graph sketching, calculus, statistical inference and proof construction (Specialist Mathematics).
- Tailored explanations and practice to individual learning styles to improve understanding and exam readiness for ATAR assessments.
- Helped students build mathematical intuition and methodical problem-solving through targeted feedback, structured revision, and exam simulation strategies.

EXTRACURRICULAR

Australian Nacra 15-17 Class Association

September 2020 – April 2022

Vice-President

- Participated in organisation of the state and national racing calendar for Nacra 15 and Nacra 17 class boats, coordinating event schedules, logistics, and participation across multiple regions.
- Acted as point of contact for association members and non-members, addressing inquiries related to class rules, event participation, and junior training opportunities.
- Facilitated communication between members, event organisers, and sponsors to ensure smooth operations and the successful execution of events.
- Played a key role in promoting youth development and junior training initiatives to encourage participation in the Nacra 15 and 17 classes.

HIGH PERFORMANCE SAILING & ACHIEVEMENTS

Experienced in competitive high-performance catamaran sailing since 2012, including participation in international classes such as Nacra 15, Formula 16, Foiling Viper, Nacra 17, and Formula 18. I have achieved multiple national podium finishes and consistent top placements in these highly competitive classes. My extensive and specialist experience covers a broad spectrum of hydrodynamic performance, spanning non-foiling displacement, semi-foiling with curved boards, and full foiling designs. My foiling experience includes the Foiling Viper, Ballistic 8 custom design, and notably the former Emirates Team New Zealand Foiling SL33 since June 2023. I also served as Vice-President of the Australian Nacra 15-17 Class Association.

NACRA 15 Catamaran Australian National Championships

January 2024

Vice Champion

Formula 18 Catamaran Australian National Championships

January 2023

Youth Champion

Formula 16 Catamaran Australian National Championships

January 2023

Vice Champion

NACRA 17 Australian Open Championships

January 2022

4th place

State Competitions

2020 – 2024

- Champion 2023 QLD Formula 16 State Championships
- Champion 2022 QLD Formula 16 State Championships
- 4th Place 2022 NSW Formula 16 State Championships
- 3rd Place 2022 VIC Formula 16 State Championships
- Vice Champion 2022 QLD NACRA 15 State Championships
- Vice Champion 2021 QLD NACRA 15 Youth Week
- Vice Champion 2021 QLD NACRA 15 State Championships
- Vice Champion 2020 QLD NACRA 15 State Championships
- Vice Champion 2020 NACRA 15 Sail Brisbane
- 5th Place 2020 NSW NACRA 15 State Championships