Dr.Felix Marattukalam

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My Website
LinkedIn Profile

▬▬ Personal Statement

'An astute Engineer with a passion for efficiently engineered solutions'

My experience spans artificial intelligence, identity and access management, biometrics, business operations, data science, radar systems, synthetic aperture radar (SAR) for Earth observation, and software security across both public and private sectors. I hold a Bachelor of Engineering, a Master of Technology in Electronics and Telecommunications Engineering, and a PhD in Electrical and Electronics Engineering. I currently work as a Senior Research Technician at the University of Auckland and a Senior Engineer with Restore Lab in Wanaka, a New Zealand space and remote sensing research company advancing efficient Earth observation technologies. I also consult internationally on topics including biometrics, computer vision, SAR systems, radio engineering, and AI applications. With a strong engineering mindset and a drive to innovate, I strive to develop solutions that connect research, technology, and real-world impact.

▬▬ Education

2019-2023	**PhD, Doctor of Philosophy, The University of Auckland, New Zealand**
Specialization	Electrical, Computer & Software Engineering (Biometrics & Computer Vision)
2015-2017	**M Tech, Master of Technology, NMIMS, Mumbai, India**
Specialization	Electronics & Telecommunication Engineering, (Telecommunication Systems)
2011-2015	**BE Hons, Bachelor of Engineering, The University of Mumbai, India**
Specialization	Electronics & Telecommunication Engineering

▬▬ Relevant Experience

2021–Present — **Senior Research Technician**, *Permanent - Full-time*, The University of Auckland

Lead technical operations for Signal Processing, Radio, and Embedded Systems labs, including equipment maintenance, calibration, and H&S compliance.

Developed hardware/software prototypes for computer vision, embedded systems, and ML/AI research.

Provided engineering support in LabVIEW, MATLAB, CST Studio, CAD tools, and embedded programming.

Managed lab resources, procurement, and budgeting; supervised research students and project teams.

Supported teaching and course development in AI/ML, Embedded Systems, and Electronics.

Led industry-aligned R&D projects and provided consultancy on emerging technologies.

2024 - present — **Senior Engineer**, *Permanent - Part-time*, Restore Lab Limited

Support integration and test of SlimSAR at Merlin Labs including nominal flight planning, throughput testing and automation of flight operations

Working with the larger team, our collaborators and potential external users such as councils, Iwi, Tonkin Taylor, Waka Kotahi etc to identify relevant and responsive products and workflows

Rongowai python-based processing and operations pipeline design & maintenance. Including updates to calibration and algorithms for the L1 and also L2 and higher order geophysical and derived products such as gridded soil-moisture, inundation and coastal change products.

Proposal and grant writing, up-to-date publication of completed work along with the presentation of findings domestically and internationally

2024-2025 — **Head of Advance AI Research**, *Permanent-Full-time*, Watchful Ltd

Lead the AI research promoting an environment of innovation and excellence. Develop and oversee all AI research projects from inception to implementation.

Day-to-day activities of the video management system design, development, and implementation, including both hardware and software.

Provide specialist advice for electrical, solar, and electronic systems for optimization and ensuring that industry health and safety standards are followed.

Mentor team members in roles where support functions include the development and use of AI technoogy.

Manage the software development workflow for the company by introducing and implementing tech-stack.

Provide leadership to customer-facing and operational segments of the business to ensure that requests and queries are addressed

Drafting user guides, standard operating procedures and other key documentation specifying functional information of software and hardware solutions.

2022-2024 **Data Scientist-Identity**, *Permanent-Full-time*, Ministry of Business, Innovation and Employment (MBIE), Immigration New Zealand

Day-to-day activities of the biometrics and forensics security team related to identity management. This involves application of SQL, SAS, and other DBMS to retrieve the data from the tables and wrangle them into shape using R/Python to generate meaningful insights from the data.

Provide Subject Matter Expertise (SME) in the area of security, biometrics and forensics to support the identity matching process and queries arising from Official Information Acts, Police, Interpol, and NZ Customs.

Business requirement gathering, conducting feasibility checks, performing cost-benefit analysis and solution scoping

Performing factory acceptance tests, site acceptance tests and user acceptance tests for software projects

Design and development of automated matching engines used for identity mapping in the visa, NZeTA, and border movement process.

Design and development of the rules for the manual matching process by fitting the models developed and obtaining insights from the model behaviour.

Training and supervision of employees who are new to database management systems and biometrics.

2019-2021 **Graduate Teaching Assistant**, *Contract-Part-time*, The University of Auckland

Fundamentals of Computer Engineering, Artificial Intelligence and Machine Learning, Distributed Cyber-Physical Systems Design, and Embedded and Advanced Embedded System Design, Analogue and Digital Design, Electrical and Digital Systems, Electrical Engineering Design, and Radio Engineering and Communication Systems

Lecturing, course design, hardware & software design, simulation and testing, supervising projects

2019-present **Lead Software Technology Consultant**, *Contract-Part-time*, Breeur Solutions, India

Software advisory & startup inception business consultancy

Concept design, development & software testing team lead

2016-2019 **Director**, *Directorship*, Marafel Limited, India

Marafel Solutions was incorporated in 2016 as a software and web development company. The company successfully completed multiple projects and was later acquired by Croadz Design and Development in November 2019 as part of merger and acquisition move.

Business consultancy, website, software as an application (SaaS) development, Software Project Management

2016-2017 **Embedded Systems Developer**, *Contract-Full-time*, Croadz Design and Development, India

Firmware development using HTML, Java, C, C++, Matlab

Software Testing for RF systems, PCB designs (SMT)

Microcontroller & VHDL programming

Technical Expertise

Domain specific	Prevention and detection protocols in security environment, investigation experience using extensive immigration data, identity management, biometrics, identity data science and security
Machine Learning	Computer Vision, Machine learning, Artificial Intelligence systems for Image Recognition, experience with Yolov8, GPT and other sota models
Biometrics	Identity management, biometrics, identity data science, vascular biometrics
Data Science	Computer skills for data analysis, data storytelling, data mining, data modelling and data reporting
Programming Language	C#, PhP, VueJS, git extensions, octopus deploy, kubernetes, C, C++, Java, System J, PLC controller, R, HTML,SAS, PowerBI, SQL, Python
Platforms	Google Cloud Platform, AWS Sagemaker, Bedrock, Azure, VSCode

Integrations	API integration, webhook destination design, video interface integration, ONVIF protocol implementation, Remote Network configuration and Remote video stream programming
OS	Windows, Linux and Mac OS, command line interface
Hardware Design	LT Spice, Altium Designer, CST Studio, PCB design, STM32, ATmel Programming, microchip, 3D CAD design, 3D printing, laser cutting
Methodologies	Programming methodologies and pipeline development, Lean vs agile methodology knowledge base
H & S	Health and Safety/Risk Management protocols
Communication	Radio systems Engineering and Microstrip Antenna Design, Radar, Sonar, Laser and Near Infrared Imaging, ESPs, Raspberry Pi and other hardware components
Suites	Microsoft 365 , Slack, Trello, Azure Devops, Discord, Asana, EH, ODM, retool and other tools
Functional Consulting	Business Requirement Gathering, Feasibility Check, Cost Benefit Analysis, FAT, SAT, UAT, Functional Specification and User Guide drafting
Languages	English, Hindi, Marathi, Beginner in Malayalam, te reo Māori

Education

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Specialization Electronics & Telecommunication Engineering, (Telecommunication Systems)

2011-2015 **BE Hons, Bachelor of Engineering, The University of Mumbai, India**
Specialization Electronics & Telecommunication Engineering

Other Experience

2024–Present **Professional Teaching Fellow**, *The University of Auckland*

Lecturing ELECTENG331: Signals and Systems, COMPSYS721: Advanced AI, and COMPSYS306: AI and Machine Learning.

2024–Present **AI Research Consultant**, *Watchful Limited*

AI architect and developing IoT hardware solutions integrated with software platforms.

Conducting feasibility, cost-benefit, and solution scoping analyses using agile principles.

Advising on state-of-the-art computer vision models and applications.

2023–2024 **Research Fellow**, *The University of Auckland*

Consultant for SFTI-funded shape-shifting antennas and NASA CYGNSS Rongowai Science Payload projects.

2022–2024 **Guest Lecturer**, *The University of Auckland*

Lecturing COMPSYS306: Machine Learning and AI, and COMPSYS704: SystemJ and Distributed Computing.

2020–2021 **Swim Instructor & Lifeguard**, *Auckland Council*

Boatsafe NZ representative; AUSTSWIM-certified instructor and staff trainer.

2019–2021 **Accounts Administrator**, *St Peter's College, Auckland*

Managed admissions-period accounts and supported digital portal operations.

Relevant Information

Work Eligibility: Full rights to work in New Zealand
Drivers Licence: **Class 1 and Class 6** full drivers license with own vehicle

References

Available on request