MANJU VALLAYIL

AI Researcher | Data Systems Innovator | Advocate for Ethical & Inclusive Tech

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EXPERIENCE

Research Assistant – AI for Cultural Tech

Auckland University of Technology

Mar 2025 – Present Auckland, NZ

- Provide research and technical support for the **TechTahi** project – an AI-driven, syntax-free initiative aimed at empowering Māori communities through culturally relevant technology solutions.

Research Officer – AI-Driven Language Learning Prototype

Auckland University of Technology

Sep 2021 – Dec 2024 Auckland, NZ

- Co-developed **Te Kōhanga o te Tūī**, a voice-interactive bilingual learning prototype for tamariki (1–5 years), combining te reo Māori and English.
- Implemented core NLP pipeline for speech recognition and multilingual response generation.

Research Assistant – Tinnitus Detection

Auckland University of Technology

Mar 2022 – Mar 2023 Auckland, NZ

- Designed deep learning pipelines integrating EEG, clinical, and psychological data to improve detection and treatment prediction of tinnitus.
- Pre-processed raw EEG signals using domain-informed filters and implemented classifiers using CNN and hybrid attention-based models.

Business Analyst

Tureya Limited

Oct 2017 – Mar 2019 Auckland, NZ

- Led requirement engineering and stakeholder communication for mobile apps.
- Delivered UX wireframes, data flow diagrams, and test plans supporting successful MVP delivery for 3+ apps.

QA Engineer (Automation)

TechWyse Internet Marketing

May 2012 – Feb 2014 Cochin, India

- Developed automated test scripts in Selenium for AdLuge, a proprietary lead management SaaS platform.
- Built data-driven tests and integrated bug tracking with Mantis and SQL-based verification routines.

QA Engineer

ART Technology & Software India Pvt. Ltd

Nov 2010 – Apr 2012 Cochin, India

- Performed SQL-based backend validation, test case documentation, and system testing of e-commerce platforms linked with Microsoft RMS.

PUBLICATIONS

-only first-author publications are listed below

Journal Articles

- M. Vallayil, P. Nand, W. Q. Yan, H. Allende-Cid, and T. Vamathevan, "CARAG: A context-aware retrieval framework for fact verification, integrating local and global perspectives of explainable AI," *Applied Sciences*, vol. 15, no. 4, p. 1970, 2025. DOI: 10.3390/app15041970.
- M. Vallayil, P. Nand, W. Q. Yan, and H. Allende-Cid, "Explainability of automated fact verification systems: A comprehensive review," *Applied Sciences*, vol. 13, no. 23, p. 12 608, 2023. DOI: 10.3390/app132312608.

Conference Proceedings

- M. Vallayil, P. Nand, and W. Q. Yan, "Explainable AI through thematic clustering and contextual visualization: Advancing macro-level explainability in AFV systems," in *ACIS 2024 Proceedings*, AIS Electronic Library (AISeL), 2024. [Online]. Available: https://aisel.aisnet.org/acis2024/101.

Books

- M. Vallayil, H. Abraham, T. Ka'ai, T. Smith-Henderson, D. Ripia, and T. I. R. Institute, *Whakamanawa te mātauranga: Decolonising the STEM Space and (Re)imaging Curriculum and Practice through Māori and Pacific Knowledge in STEM Subjects and Disciplines to Empower Indigenous Students*. Auckland: Te Ipukarea, AUT, 2024, Archived by the National Library of New Zealand, ISBN: 9781991011398. [Online]. Available: https://natlib.govt.nz/records/54626398.

Datasets

- M. Vallayil and P. Nand, *factver_master (Revision 0ff0df9)*, 2025. DOI: 10.57967/hf/5772.

For the complete list of publications, please visit my ResearchGate profile: https://www.researchgate.net/profile/Manju-Vallayil-2

EDUCATION

PhD in Computer Science
Research focused on Explainable AI for Automated Fact Verification (thesis submitted; oral examination expected in late July 2025)

School of Engineering, Computer and Mathematical Sciences, Auckland University of Technology (AUT)

Mar 2020 – Feb 2025

Masters of Information Technology
Eastern Institute of Technology

Mar 2016 – April 2019

Bachelor of Technology (BTech)
Computer Science & Engineering

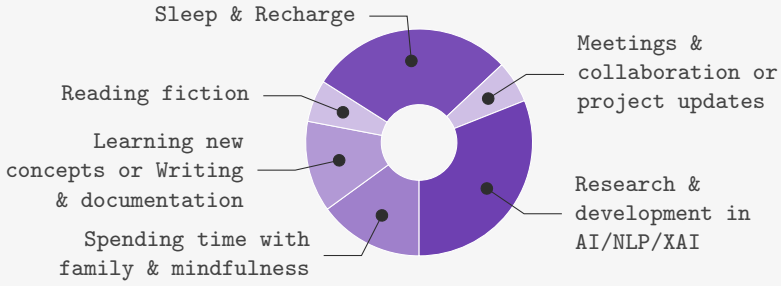
Govt. Engineering college, Palakkad

Mar 2004 – Dec 2009

SKILLS

- Data Analysis & Visualization (Matplotlib, Seaborn, Plotly)
- Research Design & Technical Writing
- Python, Pandas, NumPy, Scikit-learn
- Natural Language Processing (NLP)
- Explainable AI (XAI)
- Retrieval-Augmented Generation (RAG)
- Māori-Centred Design or Cultural Relevance in Tech
- Git, Linux, Flask
- HTML, CSS, JavaScript

A DAY OF MY LIFE



LIFE PHILOSOPHY

" Discipline Equals Freedom "
— inspired by Jocko Willink

STRENGTHS

Quick Learner | Hard-working | Eye for Detail | Organized | Self-Motivated | Problem Solver | Adaptable

MOST PROUD OF

Reviving an innovative language education initiative
Successfully led and delivered the Te Kōhanga o te Tūī prototype—a voice-activated, bilingual learning tool to support tamariki (1–5yrs) in learning te reo Māori and English.

Blending culture and AI
Contrubution to TechTahi, an AI-driven, syntax-free platform that centers NZ Māori cultural relevance in technology learning, integrating cultural narratives with cutting-edge AI methods.

Advancing health diagnostics
Designed and implemented deep-learning models incorporating neurological, clinical & psychological data to predict Tinnitus outcomes, yielding enhanced EEG-based classifiers for treatment response.

From QA to Innovation
Transitioned from QA roles to PhD research in AI, demonstrating resilience, adaptability, and self-driven growth, from automating tests using Selenium and SQL to conducting AI research at AUT.

AWARDS

- **PhD Full Tuition Fee Waiver**
  2021-2024
- **AUT ECMS Research Scholarship**
  2022
- **AUT DCT Faculty Postgraduate Summer Research Award x 2**
  2023, 2024
- **Futures Pacific (CIIRID: IDEA) – AUT-PUCV Chile Scholarship x 2**
  2021, 2023
- **AUT Doctoral Journal Writing Grant**
  2025

REFEREES

Contact details provided with the application.