

# Duke Nguyen

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## SUMMARY

**Research assistant**, research graduate student in machine learning at the [University of New South Wales](#), and former software engineer with strong background in backend development and database engineering. My research interests are Natural Language Processing (**NLP**), **Efficient Transformer**, Large Language Model (**LLM**), and Random Fourier Features (**RFF**). I am currently supervised by [Dr. Aditya Joshi](#).

## SKILLS

*Natural Languages*: English, Japanese, Vietnamese  
*Formal Languages*: Python, SQL, C, TypeScript, JavaScript, Crystal, Ruby, Latex  
*Libraries*: LangChain, Pytorch, Sklearn, Pandas, Numpy, Matplotlib, React.js  
*Others*: CI/CD, Docker, Cloud (AWS/ Azure), Statistics, Research, Documentation

## PROJECTS

### [AI-Generated Text Detection](#)

- Presented at [ALTA 2023](#): Nguyen, D., Naing, K.M.N. and Joshi, A., 2023. Stacking the Odds: Transformer-Based Ensemble for AI-Generated Text Detection. *Australasian Language Technology Association*.
- Achieves a remarkable **95%** accuracy in detecting AI-generated text through an innovative ensemble of lightly fine-tuned Transformer models, boasting rapid training times without compromising performance. Serves as a robust solution to counter malicious use of text-generating AI, ensuring digital content integrity.

### [Fake News Detection](#) (Grade: 90%).

- Enhances current detection techniques, helping combating against misinformation, by integrating BERT and linguistic features (selected via ANOVA and Pearson correlation) with a novel similarity measure against topically aligned articles, as validated by Google News' PageRank.

### [Authorship Identification](#)

- Won the **Innovative Applications of AI Award** at [BerriJam Jam April 2023](#) with *Team Spirit*.
- Tackled authorship identification on the Standardized Project Gutenberg Corpus, achieving significant results with a **95.12%** accuracy using a SDAE with SVM, surpassing the performance of finely-tuned BERT models.

## EXPERIENCE

*Research Assistant* 2023 - 2024  
[UNSW](#), Sydney NSW

- Executes complex research tasks as part of a project funded by [Google's](#) exploreCSR grant. Tasks include data collection, analysis, reporting, and applying machine learning models, natural language processing (NLP) techniques, large language models to achieve research objectives.

*Casual Academic* 2024 - 2024  
[UNSW](#), Sydney NSW

- Led engaging machine learning tutorials for 30 students in three groups, with topics covering linear models, tree learning (kNN), ensemble learning, unsupervised learning, neural networks. Enhanced learning through personalized feedback and query resolutions.

*JavaScript Developer* 2021 - 2022

[QSSstudio](#), Sydney NSW

- Contributed to the development, maintenance, and enhancement of the [Servo-Track](#) API, including authentication/authorization for an IoT cluster, serverless and Lambda application deployments, and CI/CD (Bitbucket, Docker).

*Software Engineer* 2020 - 2021

[PlaceOS](#), Sydney NSW

- Engineered a cutting-edge e-commerce platform for IoT technologies and services (crystal, PostgreSQL, Docker, Azure AD B2C, Xero).
- Architected and managed a robust CI/CD pipeline utilizing Travis, GitLab, and GitHub Actions, paired with Docker for containerization. Additionally, maintained critical databases, ensuring data integrity and availability.

*Software Engineer Intern* 2020 - 2020

[PlaceOS](#), Sydney NSW

- Collaborated on the design and development of a Xero-based financial micro-service for an e-commerce platform; leading the standardization of technical documentation format along IEEE standards.

## EDUCATION

*Master of Information Technology (Artificial Intelligence), Distinction* 2022

[University of New South Wales](#), Sydney NSW

- *Courses:* Neural Networks & Deep Learning, Machine Learning & Data Mining, Computer Vision, Applied AI, Big Data Management, Artificial Intelligence.

*Diploma of Information and Technology, Distinction* 2020

[Academy of Information Technology](#) (Coder Academy), Sydney NSW

*Bachelor of Arts, Distinction* 2019

[University of Wollongong](#), Wollongong NSW

- Faculty Merit Scholarship & Undergraduate Excellence Scholarship (2016-2019)

## WORKSHOPS

*Speaker*

- [Research Seminar Association, Kernel Learning in Attention](#)
- NLP Reading Group (UNSW)
- [Crystal 1.0 Conference - Macros in Practice](#)

*Participant*

- [Collective and Robust Ubiquitous Intelligence \(CRUISE\) Lab](#)
- [Rainbow AI - Australia](#)

## AWARDS

[IBM Quantum Certificate of Quantum Excellence](#) in Quantum Machine Learning  
[IBM Quantum Advanced Award \(Fall 2021, Africa 2021\)](#)

## LIBRARIES

*Data structure -* [Merkle Tree](#)

*Standards -* [JSON Web Key Set](#), [Code Documentation Generator](#)

*Interface -* [etcd Client](#), [PostgreSQL Client](#), [HTTP Router](#), [Microsoft Graph Client](#)