Van Dai Do

APPLIED ARTIFICIAL INTELLIGENCE INITIATIVE (A2I2), DEAKIN UNIVERSITY

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Education

Applied Artificial Intelligence Initiative, Deakin University, PhD. in Artificial Intelligence — Aug 2023 – Present

- Research Topic: *Efficient and Safe Large Language Models With Reinforcement Learning*

Hanoi University of Science and Technology, BS in Electronics and Telecommunications - class for the gifted — Sep 2018 – Aug 2022

- GPA: 3.4/4.0
- Thesis: *Optimizing Edge Computing Models Using Deep Reinforcement Learning*

Hanoi-Amsterdam High School For The Gifted, Major: Mathematics — Sep 2015 – Aug 2018

- GPA: 9.0/10

Research & Professional Experience

Research Assistant, Deakin University – Waurn Ponds, Australia — Feb 2025 – Present

- Research on time series forecasting under the DECRA grant funded by Australian Research Council: *Complex Time-series System Forecasting Reinforced by Expert Knowledge*.
- Developed a physics-informed time-series forecasting framework for molecular dynamics simulations, predicting atomic trajectories via displacements and enforcing physical plausibility through DFT-based potential functions. **Published a paper at International Conference on Data Mining (ICDM 2025) [3]**
- Research on reasoning capabilities of Small Language Models by combining intrinsic reward with Reinforcement Learning finetuning of Language Models. **Published a paper at Transactions on Machine Learning Research (TMLR) [2]**

Ph.D Research on Efficient and Safe Large Language Models, Deakin University – Waurn Ponds, Australia — Aug 2023 – Present

- Delivered a tutorial on improving Reinforcement Learning (RL) exploration efficiency through memory-driven intrinsic motivation, presenting a taxonomy of curiosity-based agents and exploring recent advances using language models and causal reasoning for exploration. **Delivered a tutorial at The 23rd International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS 2024) [7]**
- Developed a RL–based prompt optimization approach that efficiently selects few-shot examples from episodic memory to enhance language model performance and generalization across diverse NLP downstream tasks. **Published a paper at European Conference on Artificial Intelligence (ECAI 2024) [6]**
- Developed a training-free framework for token-level activation steering in LLMs, using episodic memory and nearest-neighbor retrieval to provide adaptive alignment across safety, style transfer, and role-playing tasks. **Published a paper at The 63rd Annual Meeting of the Association for Computational Linguistics (ACL 2025) [5]**
- Developed a non-parametric alignment framework that leverages episodic control to guide LLM outputs during inference, achieving effective alignment with minimal human feedback or fine-tuning. **Published a paper at The 2025 Conference on Empirical Methods in Natural Language Processing (EMNLP 2025) [4]**

AI Research Engineer, VinBigdata – Hanoi, Vietnam — Sep 2022 – Aug 2023

- Designed and implemented passage retrieval and aspect-based sentiment extraction systems for both Vietnamese and English languages.
- Implemented Deep Passage Retriever for Open-Domain QA System for Vietnamese questions.

AI Research Intern, CinnamonAI – Hanoi, Vietnam — Jun 2022 – Aug 2022

- Agile software development (SCRUM, Git, SOLID, Docker)
- Designed and developed the text recognition module in a table information extraction.

Selected Honours And Awards

Deakin Applied Artificial Intelligence Initiative - 3MT Heat 2025
Winner of 3 Minute Thesis Contest, Deakin Applied Artificial Intelligence Initiative 2025. Title: Word-by-word: Better responses with memory.

Deakin University Postgraduate Research Scholarship 2023
Offered Higher Degree by Research scholarship for bachelor students

Honors Distinction 2022
Thesis: Optimizing Edge Computing Models Using Deep Reinforcement Learning

CinnamonAI - Minimum Viable Product (MVP) Competition 2022
2nd place in Minimum Viable Product competition with Table Information Extraction system.

WorldQuant - WorldQuantChallenge 2019 2019
Bronze medalist (solo) in WorldQuantChallenge 2019

Hanoi Mathematics Olympiad for Students 2018
The annual regional mathematics competition for high school students

- Third prize

Publications (Total Citations: 43, H-Index: 3)

1. ***Van Dai Do***, Manh Nguyen, Svetha Venkatesh, Hung Le, "SPaRFT: Self-Paced Reinforcement Fine-Tuning for Large Language Models". *Under Review, 2025*
2. Hung Le, ***Van Dai Do***, Dung Nguyen, Svetha Venkatesh, "Reasoning Under 1 Billion: Memory-Augmented Reinforcement Learning for Large Language Models" - **TMLR 2025**
3. Hung Le, Sherif Abbas, Minh Hoang Nguyen, ***Van Dai Do***, Huu Hiep Nguyen, Dung Nguyen, "Accelerating Long-Term Molecular Dynamics with Physics-Informed Time-Series Forecasting" - **ICDM 2025**
4. ***Van Dai Do***, Quan Tran, Ahmed Kirmani, Lu Zhang, Hung Le, "Sample Efficient Alignment Learning With Episodic Control" - **EMNLP 2025**
5. ***Van Dai Do***, Quan Tran, Svetha Venkatesh, Hung Le, "Dynamic Steering With Episodic Memory For Large Language Models" - **ACL 2025 [pdf] [code]**
6. ***Van Dai Do***, Quan Tran, Svetha Venkatesh, Hung Le, "Large Language Models Prompting With Episodic Memory" - **ECAI 2024 (Oral) [pdf] [code]**
7. Hung Le, Hoang Nguyen, ***Van Dai Do***, "Unlocking Exploration: Self-Motivated Agents Thrive on Memory-Driven Curiosity" - **AAMAS Tutorials, 2024**
8. Nguyen Tien Hoa, ***Van Dai Do***, Le Hoang Lan, Nguyen Cong Luong, Duc Van Le, Dusit Niyato, "Deep Reinforcement Learning for Multi-Hop Offloading in UAV-Assisted Edge Computing" - **IEEE Transactions on Vehicular Technology, 2023 [pdf]**

Skills

- Strong foundation in research methodology, with the ability to design, analyze, and interpret both theoretical and empirical studies.
- Broad experience across AI/ML and Large Language Models, Time Series research, encompassing data analysis, model development, evaluation, and optimization, with a keen interest in advancing state-of-the-art performance on public benchmarks.
- Capable of conducting independent research as well as leading and collaborating effectively within research teams.

Languages

Vietnamese
Fluent (native speaker)

French 2022
DELF (diplôme d'études en langue française) - A2

English 2021
IELTS - Overall band: 8.0

Referees

Assistant Professor Hung Le
Deakin University
Email: thai.le@deakin.edu.au

Associate Professor Loan Pham-Nguyen
Hanoi University of Science and Technology
Email: loan.phamnguyenthanh@hust.edu.vn