Minh-Duc Nguyen

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Education

VinUniversity (VinUni) — Hanoi, Vietnam
M.Sc. in Computer Science – Full Scholarship — *2026 – 2027 (Expected)*
Advisor: **Asst. Prof. Dung D. Le**

Hanoi University of Science and Technology (HUST) — Hanoi, Vietnam
B.Sc. in Mathematics and Informatics — *2019 – 2024*
Advisor: **Dr. Ngoc Thang Tran**

Research Interests

LLM-based and Agentic Recommender Systems; Memory for LLM Agents; Multi-Objective Optimization and Pareto Set Learning.

Publications

Conference and Journal Papers

Nguyen, M.D., Dinh, P.M., Nguyen, Q.H., Long, H.P., & Le, D.D. (2025). *Improving Pareto Set Learning for Expensive Multi-objective Optimization via Stein Variational Hypernetworks.* Proceedings of the AAAI Conference on Artificial Intelligence (**AAAI 2025**), 39(18), 19677–19685.

Nguyen, M.D. & Le, D.D. (2026). *A Framework for Controllable Multi-objective Learning with Annealed Stein Variational Hypernetworks.* ACM Transactions on Intelligent Systems and Technology (**TIST**).

Kieu, H.D., Zhang, D.C., **Nguyen, M.D.**, Wu, Q., Xu, M., & Le, D.D. (2026). *PromptHG: Prompt-Enhanced Heterogeneous Graph for Personalized News Recommendation.* The 48th European Conference on Information Retrieval (**ECIR 2026**).

Kieu, H.D., **Nguyen, M.D.**, Buntine, W., Nguyen, T.-S., & Le, D.D. (2026). *KALM4Rec: Keyword-Driven Retrieval-Augmented Large Language Models for Cold-Start User Recommendations.* **Machine Learning**, 115, 142.

Kieu, H.D., Zhang, D.C., **Nguyen, M.D.**, Xu, M., Wu, Q., & Le, D.D. (2025). *Enhancing News Recommendation with Hierarchical LLM Prompting.* Companion Proceedings of the ACM Web Conference (**WWW 2025**).

Kieu, H.D., **Nguyen, M.D.**, Nguyen, T.S., & Le, D.D. (2025). *Keyword-driven Retrieval-Augmented Large Language Models for Cold-start User Recommendations.* Companion Proceedings of the ACM Web Conference (**WWW 2025**).

Preprints and Work in Progress

Nguyen, M.D., Kieu, H.D., & Le, D.D. (2026). *AMEM4Rec: Leveraging Cross-User Similarity for Memory Evolution in Agentic LLM Recommenders.* Preprint, arXiv:2602.08837.

Nguyen, M.D., Le, D.D., & Nguyen, P.L. (2025). *Optimizing Electric Vehicle Charging Station Placement Using Reinforcement Learning and Agent-Based Simulations.* Preprint.

Research Experience

R2Studio, VinUniversity – Research Assistant
Advisor: **Asst. Prof. Dung D. Le** — Sep 2023 – Present

- **Memory for LLM-based recommendation:** Designed collaborative memory mechanisms that capture cross-user signals for agentic LLM recommenders (AMEM4Rec), and a trainable latent memory that refines LLM semantics into collaborative signals (in preparation).
- **LLM-based recommendation:** Contributed to retrieval-augmented LLMs for cold-start users (KALM4Rec) and LLM prompting for news recommendation (PromptHG, WWW 2025, ECIR 2026).
- **Multi-objective optimization:** Developed Stein Variational Hypernetworks for Pareto set learning in expensive multi-objective optimization (AAAI 2025, ACM TIST).

AI for Materials Science: Inverse Design for Beams
Advisors: **Asst. Prof. Dung D. Le**; **Asst. Prof. Dang Tung Nguyen** — Sep 2024 – 2026

- Developed a generative model for synthetic data augmentation and novel material design exploration.
- Applied multi-objective Bayesian optimization to identify beam designs that balance multiple structural objectives.
- Evaluated the proposed framework for efficient exploration of the material design space.

EV Charging Station Placement via Reinforcement Learning
Advisors: **Asst. Prof. Dung D. Le**; **Dr. Phi Long Nguyen** Sep 2024 – May 2025

- Developed a reinforcement learning (RL) framework for optimizing charging-station locations with a tailored action space.
- Integrated an agent-based simulation environment to model urban EV mobility and provide feedback for sequential charging-station placement decisions.
- Demonstrated improved placement efficiency compared with traditional heuristic approaches.

References

Asst. Prof. Dung D. Le – College of Engineering and Computer Science, VinUniversity
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Dr. Ngoc Thang Tran – Faculty of Applied Mathematics and Informatics, Hanoi University of Science and Technology
Google Scholar | thang.tranngoc@hust.edu.vn