NGUYEN QUANG DUNG

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Summary

AI/ML Engineer and Researcher with experience building production physics-informed ML systems, agentic LLM platforms, and graph-based retrieval for multi-hop reasoning (EMNLP 2026). Research interests lie in representation learning and the geometry of deep learning, particularly how the structure of learned representations shapes reasoning in LLMs.

Education

Hanoi University of Science and Technology Nov. 2023 – Aug. 2027 (Expected)
B.Sc., Computer Science *Hanoi, Vietnam*

Work Experience

Quantum AI & Cyber Security Institute (QACI), FPT Dec. 2026 – Present
AI Researcher *Hanoi, Vietnam*

- Research focus: LLM-based agentic systems for legacy software modernization, spanning code migration, cross-language code translation, reverse engineering, and rebuilding systems from existing codebases.

Koidra AI Nov. 2025 – Nov. 2026
AI/ML Engineer *Remote*

- Built and deployed a physics-informed greenhouse digital twin, a differentiable ODE simulator trained end-to-end via BPTT, across 14 production sites; achieved R^2 of 0.92–0.95 (air temperature) and 0.67–0.82 (vapor pressure) over multi-day forecast horizons.
- Designed a physics-informed transpiration model (R^2 of 0.90, a 20% relative improvement over the existing baseline) and flux-level heat and vapor balance diagnostics enabling root-cause analysis of forecast errors.
- Re-architected the greenhouse control module as a state machine integrating PID control with gradient-based anomaly detection, improving reliability in production.

A-Star Group Feb. 2025 – Nov. 2025
AI Engineer (Promoted from Intern) *Hanoi, Vietnam*

- Led technical development of 3 Web3 AI products from requirements to MVP, including an MCP-based multi-agent platform orchestrating 10+ on-chain tools with a 95% task-completion rate.
- Built a graph-based model identifying wallets controlled by the same owner from transaction histories of 3M+ wallets, achieving 75% accuracy; deployed as a FastAPI service.
- Developed blockchain-specific RAG and NER pipelines to improve entity grounding over on-chain data.

Publications

HyperProve: Answer-Guided Hypergraph Expansion for Multi-Hop Question Answering EMNLP 2026 (Main)
An Nguyen Phu⋆*, **Dung Nguyen Quang***⋆*, Luu Hieu An, Linh Ngo Van, Trung Le, Thien Huu Nguyen* *arXiv:2609.13768*

- Proposed answer-conditioned hypergraph retrieval over atomic facts, outperforming the strongest baselines by 6.2% in accuracy and 4.9% in F1 across three multi-hop QA benchmarks.

⋆Equal contribution

Honors & Awards

Top 6 Globally, Trustworthy NeuroSymbolic & XAI Workshop @ IJCNN 2025

Top 5 Finalist, DataFlow National Data Analysis Hackathon 2025

Second Prize, Vietnamese National Physics Olympiad (VPhO) 2022

Technical Skills

Languages & Tools: Python, PyTorch, FastAPI, Docker, Git, CI/CD, MongoDB, Vector Databases

ML & Modeling: Physics-Informed ML, Differentiable Simulation (BPTT), Time-Series Modeling, Graph ML, Representation Learning

LLMs & Retrieval: LLM Reasoning, RAG, GraphRAG, Knowledge Distillation

Agentic AI: LangChain, LangGraph, Model Context Protocol, Multi-Agent Systems, Agent Memory