

Nguyen Duong Hieu

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Professional Summary

A dedicated Data Science student with a strong research interest in Causal Inference and its intersection with Machine Learning, particularly in causal representation learning, out-of-distribution (OOD) generalization, and trustworthy AI.

Research interests: Causal inference and causal machine learning; causal representation learning; out-of-distribution generalization; trustworthy and probabilistic machine learning.

Education

National Economics University, BS in Data Science in Economics and Business Sept 2023 – Present

- GPA: 3.78/4.0
- Relevant coursework: Machine Learning, Probability & Statistics, Optimization, Linear Algebra, Data Structures & Algorithms

Tran Phu High School for the Gifted, Natural Science 1 2020 – 2023

Experience

AI Intern, Fintech & Payment, VinSmart Future (Vingroup) July 2026 – Present

- Developed an uplift-modeling proof of concept for targeted fintech marketing by estimating Conditional Average Treatment Effects (CATE) rather than conventional response probabilities.
- Built an experimentation pipeline on the Hillstrom and Criteo benchmarks, covering preprocessing, treatment-effect estimation, policy evaluation, and cost-effectiveness analysis under budget constraints.
- Designed a simulated A/B testing framework to evaluate whether learned targeting policies produce incremental outcomes.

Student Researcher, DAAI Lab – National Economics University Jan 2026 – Present

- Developed a multimodal workflow combining OCR and PhoWhisper ASR with Gemini for structured entity extraction from noisy visual and acoustic inputs.
- Built hybrid retrieval with Sentence-BERT, BM25, and Reciprocal Rank Fusion over a 50,000-SKU enterprise catalog.
- Achieved F1-scores of 0.91 on visual inputs and 0.85 on acoustic inputs, with Recall@5 of 0.93 under noisy conditions.

Research Assistant, “Does Network Position Cause Scholarly Success?” Spring 2026

With Prof. Mike Nguyen (University of Southern California) and Prof. Minh Nguyen (Florida Atlantic University)

- Curated and structured large-scale academic collaboration networks to support causal analysis of how network position affects scholarly productivity.

Student Researcher, DATAOPT Lab – National Economics University July 2024 – Jan 2026

- Implemented mathematical and convex optimization algorithms, reproduced experiments from the literature, and evaluated their behavior in machine-learning settings.

Teaching Assistant, Python for Data Science & Power BI – National Economics University Aug 2025 – Dec 2025

- Prepared practical exercises, explained Python and data-analysis concepts, and provided structured feedback on student submissions.

Publication

Promoting circular consumption behavior: Factors influencing Vietnamese Generation Z's intention to extend the lifespan of personal electronic devices 2026

Le Thu Thao, Nguyen Duong Hieu, Pham Phuong Trinh, Nguyen Minh Tung

22nd International Conference on Socio-economic and Environmental Issues in Development (ICSEED 2026)

- Applied PLS-SEM to 733 respondents using an integrated Theory of Planned Behavior and Push-Pull-Mooring framework.

Projects

Hanoi Temperature Forecasting System [GitHub] Late 2025

- Built a five-day forecasting pipeline from more than ten years of weather data, engineering 90+ lag, STL decomposition, and FFT features.
- Trained and tuned a multi-output CatBoost model ($R^2 \approx 0.84$), then evaluated predictions with SHAP explanations

and PSI/KS-test drift monitoring.

DentFlow AI – AI-Assisted Dental Booking & Clinic Flow Platform [GitHub] [Live Demo]

June – July 2026

- Built guarded AI-assisted intake and adaptive booking with structured outputs, deterministic fallbacks, and conflict-safe slot allocation.
- Implemented deterministic clinic-flow optimization with room compatibility scoring, service queues, route sequencing, realtime updates, and role-based access.

Technical Skills

- **Research methods:** Causal inference, CATE/uplift modeling, DAGs, experimental design, probabilistic ML, optimization, statistical analysis
- **Programming and data:** Python, SQL, TypeScript, Pandas, NumPy, Scikit-learn
- **Machine learning:** CatBoost, Optuna, SHAP, Sentence-BERT, BM25, LLMs, NLP, computer vision, OCR/ASR pipelines
- **Engineering tools:** Git, Docker, GitHub Actions, Next.js, React, Supabase, Streamlit, Power BI, LaTeX
- **Domain knowledge:** Microeconomics and macroeconomics fundamentals

Selected Achievements

- **2026** Third Prize, University-Level Scientific Research Competition, National Economics University
- **2025** Top 10, Hanoi Mathematical Modeling Competition
- **2024** Academic Encouragement Scholarship (Excellent), National Economics University
- **2024** Outstanding Youth Union Member Award, National Economics University
- **2023** Consolation Prize, Hai Phong City Mathematics Competition
- **2022** IELTS 7.0