

# Nguyen Trung Nguyen

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## Profile

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I am a curious student passionate about **Data Science, AI, and Backend Systems**. I am particularly interested in scalable AI solutions, intelligent agents, and fair ML models. Always eager to learn, I aim to combine strong technical foundations with practical applications.

## Skills

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- **Programming Languages:** Python, Java, JavaScript, TypeScript, SQL
- **Machine Learning & AI:** PyTorch, TensorFlow, Scikit-learn, LlamaIndex, LangChain, LangGraph
- **Backend Development:** FastAPI, Node.js, RESTful APIs
- **Frontend Development:** React.js, Next.js, Tailwind CSS, NextUI
- **Databases:** MySQL, SQLite, Qdrant
- **Tools:** Git, Docker

## Education

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**VNU University of Engineering and Technology (UET)**, BS in Information Technology Sept 2022 – Current

- CPA: 3.7/4.0
- Latest semester GPA: 3.95/4.0
- **Coursework:** A+ in Data Structures and Algorithms, Calculus I, Calculus II, Probability, Signals and Systems, along with A in OOP, Web Development.

## Experience

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**AI Engineer**, *Viettel Cyber Security* August 2025 – Current

- Developing on RAG Agents for confluence internal knowledge base of company.
- Developing SQL Agent for Data in Lake House
- Intergrating MCP Server for Agents for Company Knowledge(Jira, NocoDB, Confluence, FreshDesk)

**Research Assistant**, *Information System Lab, UET-VNU* June 2024 – Current

- Research on DeepResearch Agents.
- Developing RAG Agent for UET Finances Agents Platform.

## Projects

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• **FinOpt: Finance Agents Platform** [GitHub](#) | [Drive](#)  
Role: AI Engineer, Team Lead Team size: 4

- **Description:** FinOpt is a financial chatbot platform powered by LLMs and multi-agent systems. It routes user queries to specialized agents based on intent: finance-related questions are answered by the Finance Agent integrated with financial APIs, while news queries are handled by the Web Agent connected to external sources. Each agent is enhanced with function calling, reasoning & acting abilities, and domain-specific prompts to dynamically select the right tool for a given user query.
- **Responsibilities:**
  - \* Designed and proposed the overall system architecture for the multi-agent platform, including the workflow for routing, reasoning, and tool calling.
  - \* Developed the Agent Core backend using the LangGraph framework to enable agent orchestration and tool execution.
  - \* Built tool wrappers in Python to connect the Finance Agent with APIs such as YFinance and Finhub, providing real-time stock, company, and market data.
  - \* Implemented the initial agent version, ensuring modularity and scalability for further extensions.

- **Impact:** Created a flexible financial assistant capable of handling both financial queries and external news lookups, showcasing the power of agent-based AI in real-world finance applications.

- **LUCY: UET Finance Chatbot**

[GitHub](#) | [Website](#)

**Role: AI Engineer, Team Lead**

**Team size: 4**

- **Description:** LUCY is a Retrieval-Augmented Generation (RAG) chatbot specialized in financial documents. It integrates a Knowledge Graph to improve query understanding and retrieval accuracy. The system combines hybrid search (BM42 + dense retrieval) with advanced re-ranking strategies to provide precise, context-aware answers.

- **Responsibilities:**

- \* Designed and coded the RAG core backend and user management module using FastAPI and Qdrant vector database.
- \* Implemented hybrid document retrieval by combining BM42 text search and vector search, improving recall while maintaining high precision.
- \* Added a re-ranking layer to refine candidate documents, enhancing the accuracy of retrieved results.
- \* Integrated BAAI embedding models for semantic understanding and Gemini-2.5-Flash as the generation model for producing final responses.
- \* Packaged and deployed the application across multiple operating systems, overcoming Docker conflicts for smoother installation.

- **Impact:** Improved the chatbot's ability to retrieve and answer complex finance-related queries with higher accuracy, delivering more reliable responses for end users.

- **AURU: Landcover Classification Model**

[GitHub](#)

**Role: AI Engineer, Team Lead**

**Team size: 3**

- **Description:** A project focused on building and evaluating machine learning models for landcover classification using satellite imagery data of Bc Ninh province. The dataset consisted of CSV files containing pixel samples representing landcover types.

- **Responsibilities:**

- \* Implemented a Random Forest model achieving 96.34% accuracy, and a custom MLP model achieving 93.18% accuracy.
- \* Identified and addressed class imbalance in the dataset, caused by the overrepresentation of green land due to local geography. Proposed balancing strategies to reduce bias toward the majority class.
- \* Conducted Random Search and Grid Search for hyperparameter optimization of the Random Forest model.
- \* Proposed a deeper MLP architecture to mitigate underfitting and improve model convergence on complex satellite data.

- **Impact:** Produced highly accurate classification models and provided strategies for improving dataset balance, making the project useful for environmental monitoring and landcover analysis.

- **Qairline: Flight Booking Application**

[GitHub](#) | [Website](#)

**Role: Frontend Engineer**

**Team size: 3**

- **Description:** Qairline is a web-based flight booking platform inspired by Vietjet Air. It allows users to authenticate, search for flights, book tickets, and manage reservations.

- **Responsibilities:**

- \* Developed the frontend interface using React and TailwindCSS, ensuring a clean and responsive user experience.
- \* Integrated frontend with backend APIs for authentication (JWT-based login system), flight search, booking, and ticket management.
- \* Implemented search suggestions and interactive components to improve booking efficiency.

- **Impact:** Delivered a functional prototype of a booking system with smooth UI/UX, making the application intuitive for end-users.

- **The Resident: Apartment & Resident Management System**

**Role: Fullstack Engineer**



**Team size: 4**

- **Description:** A full-featured web platform for apartment and resident management, supporting role-based authentication, account management, apartment allocation, and statistical dashboards for building status.
- **Responsibilities:**
  - \* Developed both frontend and backend: frontend with Next.js, backend with FastAPI, and database with MySQL.
  - \* Implemented resident and apartment management modules, including CRUD operations, role-based access, and dashboard views.
  - \* Connected frontend to backend APIs, ensuring seamless data flow and consistent state management.
- **Impact:** Created a scalable and user-friendly system that simplifies resident and apartment management, improving efficiency for administrators and usability for residents.

- **The Incredible: English Dictionary Application**

**Role: Backend Developer**



**Team size: 2**

- **Description:** A university project developed for an Object-Oriented Programming course. The application serves as an English dictionary with additional features like text-to-speech, translation, and synonym lookup.
- **Responsibilities:**
  - \* Integrated multiple APIs: VoiceRSS and FPT TTS API for text-to-speech, Google Translate API for paragraph translation, RapidAPI for synonym search.
  - \* Implemented a word suggestion algorithm that recommends words starting with the same prefix as the user's query.
- **Impact:** Delivered a functional and interactive dictionary app, showcasing strong skills in API integration, OOP, and recommendation algorithms.

## Academic Publication

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- **FOAMI: Enhancing ICS Threat Detection via Feature Optimization, Realistic Augmentation, and Mutual Inference**

Hung T. Nguyen, Kiet T. Le, Nguyen T. Nguyen, Luong N. Ho, Duy B. Vu, Hoa N. Nguyen

*In Proceedings of the 14th International Symposium on Information and Communication Technology (SOICT 2025).*

**Description:** Proposed FOAMI, a novel intrusion detection framework for **Industrial Control Systems (ICS)** that combines **feature optimization**, **realistic data augmentation**, and a **mutual inference ensemble** (GBT + DL). Validated on the IEC 60870-5-104 dataset, FOAMI achieved a detection rate of **89.00%** and reduced the false alarm rate to **0.99%**, outperforming state-of-the-art methods.

## Awards and Certifications

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- Study Encouragement Scholarship for Semester 1, Academic Year 2024–2025
- Study Encouragement Scholarship for Semester II, Academic Year 2024–2025
- Study Encouragement Scholarship for Semester 1, Academic Year 2025–2026
- Vietcombank Scholarship 2025-2026
- Outstanding Student Award for Academic Year 2023–2024
- Outstanding Student Award for Academic Year 2025–2026
- IELTS 7.0