# Tran Tuan Tu

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## Summary

A final-year Electronics and Telecommunications Engineering student at Hanoi University of Science and Technology (HUST) with strong academic performance and a demonstrated focus on backend software development. My hands-on experience includes building and deploying IoT systems, RESTful APIs, and automation tools using **Python**, **TypeScript**, and **C++**. Having built a solid foundation in software engineering principles, I am now actively seeking to specialize in large-scale systems. I am eager to secure a **Cloud Engineer**, **DevOps**, or **Backend Developer** role where I can contribute to building and maintaining scalable, containerized infrastructure and deepen my expertise in modern cloud technologies.

## Education

**Bac Thang Long High School**, Hanoi — Aug 2019 – Jun 2022

**Hanoi University of Science and Technology (HUST)**, — Sept 2022 – Present
Bachelor of Engineering in Electronics and Telecommunications

- GPA: 3.35/4.0 (approx. 8.38/10)
- **Relevant Coursework:** Microprocessor and Microcontroller Systems, Signal and Systems, Machine Learning Fundamentals, Digital Logic Design, Data Structures and Algorithms, Internet of Things (Samsung Innovation Campus), Digital Communication

## Experience

**BACKEND DEVELOPER INTERN** at **HENO TECH CORP** — **[HANOI]**
**Product:** `finone.vn` — *[7/2025 – PRESENT]*

- Contributed to a **microservices-based** backend for a new fintech platform by developing and delivering core services in **NestJS**, adhering to team-wide architectural patterns for scalability and security.
- Engineered key backend microservices for **user authentication and transaction processing** to launch a new fintech product, utilizing **NestJS** and **TypeScript**.
- Enhanced code quality and team velocity by actively participating in an agile workflow, conducting peer code reviews, and managing version control with **Git**.
- Containerized backend services using **Docker**, significantly improving deployment consistency and simplifying the development environment for the entire team.
- Engineered and deployed a multi-platform **AI-powered chatbot** (**Web, Messenger, Zalo, Instagram**), automating user interactions by scripting conversations and implementing custom routing logic.

## Technical Skills

**Languages:** Python, TypeScript, C++, JavaScript, SQL, C

**Frameworks & Libraries:** NestJS, Flask, NodeJS, SQLAlchemy, PySide6, SFML

**Databases & ORMs:** MariaDB, MySQL, SQLite, Prisma

**Cloud, DevOps & Tools:** Docker, Git, Linux (Debian/Ubuntu), REST APIs, CI/CD, MQTT, JWT, SSH, Zapier

## Projects

**Self-Hosting Server on Linux (7/2025 - Ongoing) (Team Size: 1)** — Tu-Homelab

- Architected and deployed a personal homelab on a headless **Debian** server to self-host multiple services, including Pi-hole (ad-blocking), Nextcloud (private cloud), Portainer (containers management),...
- Configured and secured the server environment, managing network settings, firewall rules (UFW), and user

permissions entirely through **SSH** and the Linux command line.

- Containerized key applications using **Docker** and **Docker Compose**, automating service deployment and simplifying dependency management for stable 24/7 operation.
- Implemented a reverse proxy with **Nginx** to securely expose services to the internet with custom domain names and SSL certificates.

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**Smart Storage IoT System – Samsung Innovation Campus(05/2025 – 07/2025)** SIC-IoT-Project
**(Teamsize: 8)**

- **Led the backend development** for a team of 8, architecting a complete IoT system to process real-time sensor data and manage device actuation.
- Engineered RESTful APIs using **Flask** to provide endpoints for device monitoring, user control, and overall system diagnostics.
- Implemented a **Mosquitto MQTT** broker for low-latency, real-time message brokering between the central server and distributed IoT devices.
- Designed a modular database schema and managed data persistence with **SQLAlchemy** and **SQLite**, ensuring a maintainable storage layer for sensor readings and user data.
- Secured all API endpoints and managed role-based user access by implementing **JWT** (JSON Web Token) authentication and authorization.
- Containerized all backend services with **Docker**, creating a reproducible and isolated environment that simplified deployment and testing for the entire team.

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**Torrent Downloader and Player Project (3/2025 – 6/2025) (Team Size: 1)** Movies_AIO

- Architected a full-featured desktop movie manager in **Python**, implementing the **MVC** (Model-View-Controller) pattern with **PySide6** to ensure a scalable and maintainable codebase.
- Engineered a data persistence layer using **SQLite**, featuring advanced search, pagination, and automated metadata/poster fetching from external REST APIs.
- Automated the entire movie acquisition process by integrating the **qbittorrent API**, enabling direct downloads from magnet links with real-time progress tracking.
- Developed a polished and intuitive GUI that includes an embedded **VLC media player**, creating a seamless, all-in-one library management and viewing experience.

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**Visualization of DFS, BFS, and Dijkstra Algorithms (3/2024 – 5/2024)(Teamsize: 1)**

- Developed a desktop application in **C++** and the **SFML** graphics library to visually demonstrate the mechanics of graph traversal (DFS, BFS) and shortest-path algorithms (Dijkstra).
- Engineered an intuitive graphical interface allowing users to interact with a grid in real-time by creating obstacles and setting start/end points to observe the algorithm's execution.
- Implemented the core logic using efficient data structures, including queues for BFS and priority queues for Dijkstra's algorithm, to ensure accurate and performant visualization.

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**Speed Measurement Device with Arduino Uno (10/2022 – 12/2022) (Team Size: 1)**

- Engineered a real-time speed measurement device using an **Arduino Uno**, interfacing directly with hardware buttons for timer control and an LCD for data display.
- Implemented the core logic in **C++** to perform precise time-based calculations and designed and validated the circuit schematic using **Proteus** simulation.

## Achievements

- **C.C. Foundation Scholarship (2024.1, 2024.2)** – Awarded to students with academic excellence and financial need.
- **University Scholarship – Type Excellent (2023.1)** – Granted by HUST for top academic excellence.
- **University Scholarship – Type Good (2022.2)** – Granted by HUST for good academic performance.

- **Lotte Foundation Scholarship (2022.2)** – Awarded for outstanding academic performance and strong personal motivation.