Nguyen Ngoc Hieu

FullStack Developer

Personal details

Nguyen Ngoc Hieu

Hanoi

linkedin.com/in/ngochieuhsgs

Languages

English

Vietnamese

Profile

Hi, I'm Nguyen Ngoc Hieu — an Software Engineer with a foundation in mechatronics, robotics, and automation.I'm passionate about building intelligent systems that bring AI into practical, real-world applications.

Core Skills:

- Python for AI & Computer Vision (PyTorch, TensorFlow, OpenCV, Scikit-learn)
- Full-stack development: NestJS (backend), ReactJS/NextJS (frontend), Django
- R&D focus on robotics, virtual assistants, and metaverse integration

Goal: To grow as a technology expert in AI-driven systems and Full and contribute to impactful, innovative products.

Education

Bachelor of Engineering - BE, Mechatronics, Robotics, and Automation Engineering **Aug 2017 - Jul 2022**
Hanoi University of Science and Technology

High School Diploma, Mathematics **Jan 2014 - Dec 2017**
High School for Gifted Students, Hanoi University of Science, Vietnam National University

Employment

AI Software Engineer **Aug 2023 - Feb 2025**
Sava Meta, Hanoi, Hanoi, Vietnam
Department: R&D | Product: VR Metaverse

Key Responsibilities:
Research and develop AI technologies integrated into a VR metaverse platform, focusing on intelligent human-avatar interaction and virtual assistant systems.

1. Human Pose Estimation & Action Recognition

Goal: Enable real-time avatar control based on user actions using a single RGB camera.
Contributions: Implemented and optimized the VNect model for skeletal pose estimation. Integrated pose data into Unity to drive avatar animations.
Tech Used: Python, TensorFlow, Unity

2. AI Chatbot & Virtual Assistant with RAG (Retrieval-Augmented Generation)
Goal: Build a context-aware, voice-enabled virtual assistant for the metaverse.
Contributions: Designed dialog flow with Rasa, enhanced retrieval with LangChain + Qdrant vector DB. Integrated Google Speech-to-Text for real-time voice interaction. Developed an Agentic RAG pipeline to allow the assistant to reason and act autonomously. Simulated interactions in a VR world built in Unity.
Tech Used: Python, Rasa, LangChain, Qdrant, Google Speech-to-Text, Unity

Full Stack Engineer **Apr 2022 - Jul 2023**
Viettel AI, Vietnam
Fullstack Developer | Viettel AI (Viettel Group) - Team: R&D – Service Robotics

- Built a **web-based monitoring and control system** for real-time robot operations.
- Developed backend using **NestJS**, integrating robot APIs and sensor data processing.
- Created a dynamic dashboard using **ReactJS** for live visualization of robot activity.
- Implemented **role-based access control** for different system users.
- Managed system data using **PostgreSQL**, including activity logs and robot schedules.
- Boosted performance with **WebSockets**, **Redis Pub/Sub**, and **MQTT** for real-time communication.
- Collaborated with AI engineers to integrate navigation and computer vision modules.
- Contributed to **requirement analysis**, documentation, and on-site system deployment.

Tech Used: NestJS, ReactJS, PostgreSQL, Redis, WebSockets, MQTT, Docker

AI Engineer Intern + OJT (On Job Training) **Jan 2021 - Mar 2022**

Toshiba Software Development (Vietnam), Hanoi, Hanoi, Vietnam

1. Product Label OCR System for Japanese Supermarkets*Technologies*: PyTorch, Caffe, VitisAI, C++*Description*: Built a system to detect and recognize product price tags in complex supermarket environments.*Responsibilities*:

- Researched and implemented deep learning models for scene text detection, including CRAFT.
- Trained the CRAFT model on custom datasets, achieving 92% accuracy on validation data.
- Converted trained models from PyTorch to Caffe for compatibility with deployment pipeline.
- Optimized and deployed the model using VitisAI for edge acceleration on Xilinx hardware.
- Rewrote Python inference logic to C++ for performance on edge devices.

2. Human Pose Annotation Tool Enhancement*Technologies*: ReactJS, Flask, MongoDB*Description*: Maintained and improved an open-source annotation tool used for labeling human pose data.*Responsibilities*:

- Enhanced tool by adding support for uploading new images without refreshing the page.
- Implemented session continuation feature, allowing users to resume unfinished annotations.
- Fixed UI bugs and improved user experience for faster and smoother annotation workflows.
- Worked with Flask backend and MongoDB database to manage pose data and session states.

3. Warehouse Management System for AGVs (Automated Guided Vehicles) *Technologies*: Django, Django REST Framework, Java Spring Boot, RabbitMQ, Docker*Description*: Developed backend services for optimizing the operation of warehouse logistics robots.*Responsibilities*:

- Designed and implemented microservices to process order lists and calculate optimized paths for AGVs.
- Exposed REST APIs for communication between the order system and robot control services.
- Used RabbitMQ for asynchronous messaging between services to support real-time updates.
- Containerized backend services using Docker for ease of deployment and scalability.
- Collaborated with robotics engineers to ensure integration with physical AGV systems.

Certificates

Second prize at Annual Scientific Research Contest at Ha Noi University of Science and Technology **Jan 2019**

Description of task in research team :In our research team, my task was programming path finding algorithms for mobile robots . By programming and testing some useful algorithms ,for instances: RRT (Rapidly-exploring randomly trees), RRT* (an optimal version of RRT) and A-star, from that our team would chose the algorithm which took the advantage for our research concept.

Third Prize in Mathematics – Specialized Science Competition **Mar 2015**

Awarded Third Prize in a mathematics competition held by the High School for Gifted Students under the University of Science – VNU Hanoi.

Third Prize – 6th Annual Conference on Science Research in English 2015 **May 2015**

Conducted and presented a mathematics research project on geometry, focusing on Euler's Nine-Point Circle and Ptolemy's Theorem. The work was recognized for its clarity and depth during the 6th Annual Science Research Conference in English.