Nguyen Thanh Luan

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Education

Bien Hoa High School for the Gifted, Specialized students in Physics   Jul 2017 – Jun 2020
- First prize in Provincial Physics Competition in 2018, 2020.
- Participated in the national team of excellent Physics students.

Ha Noi University of Science and Technology, Talented Engineer Program   Oct 2020 - Sep 2024
- GPA: 3.31/4.0
- **Major:** Electronics and Telecommunications.
- A Travel Grant worth $2000 to attend the SIGCOMM 2024 conference, ranked A, held in Sydney, Australia.

Experience

FPT Software, Intern C/C++   Jul 2022 - Sep 2022
- Designing Windows Forms applications and retrieving data from SQL databases
- Exception handling and debugging/tracing techniques
- Learning linking, macros, bitwise operations, and unit testing
- Object Oriented Programming (OOP)
- Programming scheduling, threads, and multithreading in C++.

DTS Communication Technologies Corporationn, Solution Engineer   Jun 2024 - Dec 2024
- Deploying a 4G telecommunication package activation system for Mobifone. Using the SOAP protocol to connect the OSS/BSS system to the activation management software (for condition verification and activation services), then orchestrating to Network Elements to connect to customers. The system handles up to 4 million requests per day, utilizing PostgreSQL to store registered users.
- Deploying the IP Backbone network system for Mobifone.

Future Internet Laboratory, AI Team Leader   Jan 2023 - Now
- A decentralized machine learning system based on Federated Learning architecture to train a secure and accurate AI model, addressing challenges such as non-IID data, class imbalance, and heterogeneity in training devices.
- Split Learning: Researching an automated system to partition large AI models (CV, LLM) for training across multiple devices with varying performance in edge-cloud computing systems.
- Applying AI to detect anomalies and various types of cyberattacks (e.g., DDoS, DGA).
- Reinforcement learning models optimized for serverless systems.

Publications

On the Impact of Heterogeneity on Federated Learning at the Edge with DGA Malware Detection   August 2024

Ma Viet Duc, *Nguyen Thanh Luan*, Nguyen Tien Tai, Nguyen Pham Trung Hieu, Nguyen Ngoc Minh, Pham Trung Hieu, Vu Hai, Nguyen Huu Thanh

10.1145/3674213.367421

Projects

Dynamic Federated Learning - DGA Malware Detection   Fed_CSP
- An optimization algorithm for federated learning models to address the challenges of centralized AI training systems, including data security risks and the high training time required for large datasets.
- *Detecting abnormal attack data (DGA) - LSTM model, classifying MRI brain tumor image data - custom model.*
- Tools Used: *Pytorch, MQTT Mosquitto, Docker*

Utilizing Reinforcement Learning in optimizing 5G antenna systems   RL-5GAntOpt

- *Real-time optimization of transmission power for 5G BTS stations in urban areas.*
- Tools Used: *RL with Q-Learning, pygame, gymnasium*

Recognize actions in videos: Sign language - ViViT model   SignLang-ViViT

- *Supporting the translation of sign language for people with disabilities from video to Vietnamese using the Transformer Video Vision Transformer model to facilitate communication.*
- Tools Used: *Yolo v8, Pytorch*

A hospital management website   hospital-manager

- *A hospital website that allows patients to schedule appointments with doctors and store patient records. Doctors can manage patients, prescriptions, and individual patient schedules.*
- Tools Used: *Django, html/css, MongoDB*

Grocery Store Shopping App   grocery-app

- Users use the app to place orders, shop for items, and make payments. Managers and staff use the app to manage inventory, add promotional programs, and issue invoices.
- Tools Used: *Tkinter, SQLite3*

Technologies

Languages: Python, C/C++, Java, HTML/CSS

Technologies: OS - Ubuntu, Docker, Vsphere, AWS Architect

Knowledge:

- Network(switching, routing layer2, 3; CCNA; BGP) , Sercurity in network (DDOS, DGA)
- AI: Computer Vision, Transformer Model, NLP, LLM