Nhat-Minh Nguyen

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Employment History

2022 – Present

🔖 **Research Engineer**, School of Computing and Information Systems, Singapore Management University.

Projects

🔖 **MANDO** – An Enhanced Smart Contract Security Framework at mandoscan.com
- Engineered a syntax-based parser tool to parse smart contracts into multiple types of graphs, such as AST, CFG, and CG.
- Designed a novel Heterogeneous Graph Transformer architecture combined with LLMs to identify buggy smart contracts.
- Developed a full-stack MVP web application allowing users to visualize graph-based vulnerability detection, bridging the gap between theoretical research and practical industry application at mandoguru.com
- Design cloud architecture and CI/CD for the MVP on AWS cloud.

🔖 **ContractHyperAgent** – A multi-agent code generation framework specialized for smart contracts
- Orchestrate LLM-based agents into a development team to facilitate contract generation from natural language requirements.
- Integrated specialized security agents into the generation pipeline and developed user-friendly interfaces (GitHub Action, Telegram Bot) to streamline developer adoption.

🔖 **SoChainDB** – An Decentrialized Social Network Database sochaindb.com/
- Propose a pipeline for extracting big data from blockchain-based decentralized social networks.
- Publish the entire big dataset and provide APIs for database queries and compressed archive files for the research community.

Grants & Funding

🔖 SMU Business Innovations Generator Grant: S$1,500.

🔖 AWS Activate Program Credits for Start-up: US$5,000.

🔖 SMU IIE MOE De-Centralised Gap Funding for Market Discovery: S$50,000.

🔖 SMU IIE MOE De-Centralised Gap Funding: S$250,000 (*Application in progress*)

2018 – 2022

🔖 **AI team leader**, Unicloud Group, Vietnam.

Projects

🔖 **eKYC** – Automatically authenticated customer system.
- Construct a pipeline model to extract information from ID cards.
- Liveness detection, and face matching in the customer documents.
- Design APIs and deploy the server as a third-party service.
- Delivered to a number of partners, such as: KienlongBank Plus, My Sunshine, KS Securities, KSFinance, etc.

Employment History (continued)

Smart Parking – Parking management leveraging Computer Vision and IoT devices.
- Extract information from license plates.
- Build an API service to manage the in/out vehicles in the parking lots.
- Admin dashboard for managing users and visualizing the parking lots.
- Install on 2 buildings' parking management systems.

Keyword Spotting – "Hey Siri!" for the devices with limited resources.
- Build the optimized libraries for matrix operations using C language.
- Optimize and convert a light Deep Learning model to the tflite-micro format.
- Embed the models to the embedding board with ESP32 core chip.
- Wake up real-time devices.

Education

2016 – 2020   **B.Eng** *Computer Science and Engineering* in Ho Chi Minh City University of Technology (HCMUT).

Publications

Nhat-Minh Nguyen, Hoang H. Nguyen, Long Le Thanh, Zahra Ahmadi, Thanh-Nam Doan, Daoyuan Wu, and Lingxiao Jiang. "MANDO-LLM: Heterogeneous Graph Transformers with Large Language Models for Smart Contract Vulnerability Detection". In ACM Trans. Softw. Eng. Methodol. **TOSEM** Dec. 2025. DOI: https://doi.org/10.1145/3765751

Hoang H. Nguyen*, **Nhat-Minh Nguyen***, Chunyao Xie, Zahra Ahmadi, Daniel Kudenko, Thanh-Nam Doan and, and Lingxiao Jiang. "MANDO-HGT: Heterogeneous Graph Transformers for Smart Contract Vulnerability Detection". In Proceedings of the 20th International Conference on Mining Software Repositories. **MSR** '23. DOI: https://doi.org/10.1109/MSR59073.2023.00052

Hoang H. Nguyen, **Nhat-Minh Nguyen**, Hong-Phuc Doan, Zahra Ahmadi, Thanh-Nam Doan and, and Lingxiao Jiang. "MANDO-GURU: Vulnerability Detection for Smart Contract Source Code By Heterogeneous Graph Embeddings". In Proceedings of the 30th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering. **ESEC/FSE** 2022. DOI: https://doi.org/10.1145/3540250.3558927

Hoang H. Nguyen, **Nhat-Minh Nguyen**, Chunyao Xie, Zahra Ahmadi, Daniel Kudenko, Thanh-Nam Doan, and Lingxiao Jiang. "MANDO: Multi-Level Heterogeneous Graph Embeddings for Fine-Grained Detection of Smart Contract Vulnerabilities". In Proceedings of the 9th IEEE International Conference on Data Science and Advanced Analytics. **DSAA** '22. DOI: https://doi.org/10.1109/DSAA54385.2022.10032337

Hoang H. Nguyen, Dmytro Bozhkov, Zahra Ahmadi, **Nhat-Minh Nguyen**, and Thanh-Nam Doan. "SoChainDB: A Database for Storing and Retrieving Blockchain-Powered Social Network Data". In Proceedings of the 45th International ACM SIGIR Conference on Research and Development in Information Retrieval. **SIGIR** '22. DOI: https://doi.org/10.1145/3477495.3531735

Provisional Patent: "*Electronic platform for detecting bugs in smart contract code*". Application No.10202500228T. Full patent in progress.
[* *Equal contribution*]

Skills

Languages   English and Vietnamese

Programming   Python, C/C++, R, Javascript/Typescript, Html, css, sql, xml/xsl, LATEX, …

Misc.   Academic Research, Publishing, Full-stack, DevOps, Cloud Architecture, Docker.

Miscellaneous Experience

2025   ▌   **Gemini Educator: Use AI in Education**. Awarded by Google.

References

Professor Lingxiao JIANG - lxjiang@smu.edu.sg

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Dr. Thanh-Nam Doan - me@tndoan.com

Professor Tho Quan - qttho@hcmut.edu.vn