HOANG H. NGUYEN

Researcher PhD Candidate

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🎂 21.01.1990 🏠 Vietnamese ⭕ Married 📍 Hannover, Germany

WORKING EXPERIENCE

Researcher PhD Candidate
L3S Research Center, Leibniz University Hannover

- Applying graph embeddings and deep learning for social network analysis to establish or predict unobserved connections of the entities such as persons, organizations, and locations, to enhance investigation capabilities for large criminal cases
- Applying graph learning on control-flow graphs, program call graphs, and data dependency for vulnerability detection in blockchain smart contracts
- Building a database for storing and retrieving blockchain-powered social network data, which is suitable for the analytics of massive-scale social networks and cross-domain user behaviors

📅 February 2020 – Current 📍 Germany

Research Collaborator
HCMC University of Technology - HCMUT

- Modeling of control flow and data dependency of Ethereum smart contracts
- Using machine learning techniques to analyze security vulnerabilities in transaction data of Bitcoin and Ethereum networks
- Analyzing real-time data of warehouse and transportation management systems, which integrate to Ethereum and EOS blockchain

📅 June 2018 – December 2019 📍 Vietnam

Research Associate
Singapore Management University

- Generating control-flow graphs and data dependencies of Android platform
- Analyzing Android apps behaviors based on whole-network graphs
- Context-aware code localization and recommendation

📅 May 2017 – March 2018 📍 Singapore

Research Assistant
Livelabs, Singapore Management University

- Generating control-flow graph of Android framework
- Analyzing Android apps behaviors based on whole-system control flow
- Identifying private data leaks in Android framework APIs

📅 Mar 2016 – Feb 2017 📍 Singapore

Android Developer
Fabrica Vietnam Co., Ltd

- User experience analysis using Material Design
- QR Code and Image Processing technologies
- Payment Processing technologies
- Building apps related to Coupon & Auction, Car Selling, and Overlay Photos

📅 Jun 2014 – Dec 2015 📍 Vietnam

Android Team Leader
EFSE Co., Ltd

- Exploring/Designing mobile apps' user-interaction interface for the young
- Near Field Communication and Call Blocking technologies
- Analyzing Android native launcher
- Designing new techniques for floating apps
- Building apps related to Android Launcher, NFC, Call Blocker, and Location

📅 Jan 2013 – May 2014 📍 Vietnam

RESEARCH INTERESTS

Graph Mining Network Analysis Machine Learning Program Analysis Blockchain Smart Contracts

EDUCATION

🎓 MEng in Computer Science
HCMC University of Technology - HCMUT

Computer Security - Grade A
Thesis: Generating Control-Flow Graph from Android Binary Code

📅 April 2017 📍 Vietnam

🎓 BSc in Electronics and Telecommunications
HCMC University of Science - HCMUS

Computer and Embedded Systems - Grade B

📅 March 2013 📍 Vietnam

TECHNICAL SKILLS

Java Python Javascript Solidity

PyTorch NetworkX Scikit-learn NumPy Ethereum EOS Soot

Git Google Cloud APIs Android SDK Flask NodeJS KnockoutJS D3JS

RESEARCH SKILLS

Report Writing Presentation Self Motivation Teamwork Problem Solving Critical Thinking

FEATURED PROJECTS

MANDO SoChainDB ROXANNE Blockchain WMS-TMS LibraryGURU Android System Analysis Shaken QR Kurumaerabi Android Launcher

REVIEWER

- Digital Transformation and Global Society 2020 (DTGS 2020, St. Petersburg, Russia, June 24-26, 2020)
- 40th International Conference on Software Engineering 2018 (ICSE 2018, Gothenburg, Sweden, May 27 - June 03, 2018)

FEATURED PUBLICATIONS

Applying Graph Learning for Vulnerability Detection in Blockchain Smart Contracts

- **Nguyen, H. H.**, Bozhkov, D., Ahmadi, Z., Nguyen, N. M., & Doan, T. N. (2022, July). 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* (pp. 3036-3045). (Rank A*)
- Bang, T., Nguyen, **H. H., Nguyen**, D., Trieu, T., & Quan, T. (2020). Verification of ethereum smart contracts: a model checking approach. *International Journal of Machine Learning and Computing, 10*(4).

ROXANNE Project - Real Time Network, Text, And Speaker Analytics For Combating Organized Crime - https://roxanne-euproject.org/

- Nguyen, T. H., **Nguyen, H. H.**, Ahmadi, Z., Hoang, T. A., & Doan, T. N. (2021, December). On the Impact of Dataset Size: A Twitter Classification Case Study. In *IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology* (pp. 210-217). (Rank B)
- Dikici, E., Fabien, M., Horınek, J., Hughes, J., Janošik, M., Kovac, M., Motlicek, P., **Nguyen, H.H.**, Parida, S., Rohdin, J., Skácel, M., ... & Krishnan11, A. (2021). ROXSD: a Simulated Dataset of Communication in Organized Crime. In *ISCA Symposium on Security and Privacy in Speech Communication (2021)* (pp. 32-36).
- Fabien, M., Parida, S., Motlícek, P., Zhu, D., Krishnan, A., & **Nguyen, H. H.** (2021). ROXANNE Research Platform: Automate Criminal Investigations. In *Interspeech* (pp. 962-964). (Rank A)
- **Nguyen, H. H.**, Zerr, S., & Hoang, T. A. (2020, December). On Node Embedding of Uncertain Networks. In *2020 IEEE International Conference on Big Data (Big Data)* (pp. 5792-5794). IEEE. (Rank B)

Library GURU Project - Android API recommendation system - http://libraryguru.info

- Yuan, W., **Nguyen, H. H.**, Jiang, L., Chen, Y., Zhao, J., & Yu, H. (2019). API recommendation for event-driven Android application development. *Information and Software Technology, 107*, 30-47. (Q1 Journal)
- Yuan, W., **Nguyen, H. H.**, Jiang, L., & Chen, Y. (2018, May). LibraryGuru: API recommendation for Android developers. In *Proceedings of the 40th International Conference on Software Engineering: Companion Proceeedings* (pp. 364-365). (Rank A*)

ACHIEVEMENTS

- **Silver Award $7000 at Blockchain Hackathon, 2018**
  Vietnam Blockchain Hub
- **SMU Internship Scholarship for Excellent Graduate Students, 2016**
  HCMC University of Technology
- **500,000 app downloads, 2015**
  Google Play store

REFERENCES

Prof. Dr. Wolfgang Nejdl
@ nejdl@l3s.de
✉ Leibniz University Hannover

Assoc. Prof. Dr. Lingxiao Jiang
@ lxjiang@smu.edu.sg
✉ Singapore Management University

Assoc. Prof. Dr. Tho Quan
@ qttho@hcmut.edu.vn
✉ HCMC University of Technology

Dr. Zahra Ahmadi
@ ahmadi@l3s.de
✉ Leibniz University Hannover

Project on Analyzing Android System Behaviors

- **Nguyen, H. H.**, Jiang, L., & Quan, T. (2017, May). Android repository mining for detecting publicly accessible functions missing permission checks. In *2017 IEEE/ACM 25th International Conference on Program Comprehension (ICPC)* (pp. 324-327). IEEE. (Co-located ICSE 2017) (Rank C)

- **Nguyen, H. H.**, Jiang, L., & Quan, T. T. (2017). Whole-system analysis for understanding publicly accessible functions in Android.(2017). In *South East Asian Technical University Consortium (SEATUC) 11th Symposium Proceedings: Ho Chi Minh City, Vietnam, March 13-14.*

- **Hoang, N. H.** (2016, June). Poster: Android whole-system control flow analysis for accurate application behavior modeling. In *Proceedings of the 14th Annual International Conference on Mobile Systems, Applications, and Services Companion* (pp. 30-30). (Rank B)