HOANG H. NGUYEN

Researcher PhD Candidate

@ mr.erichoang@gmail.com @ ehoang@l3s.de 📞 +49-151-400-26121
🎂 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

- **HH Nguyen**, D Nguyen, D Bozhkov, Z Ahmadi, NM Nguyen, and TN Doan (2022). "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, Madrid, Spain, July 11-15, 2022. (accepted, Rank A*)
- T Bang, **HH Nguyen**, D Nguyen, T Trieu, and T Quan. "Verification of Ethereum Smart Contracts: A Model Checking Approach," in *International Journal of Machine Learning and Computing*, vol. 10, no. 4, 2020.

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

- TH Nguyen, **HH Nguyen**, Z Ahmadi, TA Hoang, and TN Doan (2021). "On the Impact of Dataset Size: A Twitter Classification Case Study." In *Proceedings of IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology* (pp. 210-217). (Rank B)
- M Fabien, S Parida, P Motlicek, D Zhu, A Krishnan, and **HH Nguyen** (2021). "ROXANNE Research Platform: Automate Criminal Investigations," in *Proceedings of INTERSPEECH 2021, 962-964.* (Rank A)
- **HH Nguyen**, S Zerr, and TA Hoang, "On Node Embedding of Uncertain Networks," in *International Conference on Big Data*, IEEE BigData 2020, Atlanta, GA, USA, December 10-13, 2020, pp. 5792-5794. (Rank B)

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

- W Yuan, **HH Nguyen**, L Jiang, Y Chen, J Zhao, and H Yu, "API Recommendation for Event-Driven Android Application Development," in *Information & Software Technology*, vol. 107, pp. 30-47, 2019. (Rank B)
- W Yuan, **HH Nguyen**, L Jiang, and Y Chen, "LibraryGuru: API recommendation for Android developers," in *Proceedings of the 40th International Conference on Software Engineering: Companion Proceedings*, ICSE'18, Gothenburg, Sweden, May, 2018, 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

- **HH Nguyen**, L Jiang and T Quan, "Android Repository Mining for Detecting Publicly Accessible Functions Missing Permission Checks," in *Proceedings of 25th IEEE International Conference on Program Comprehension*, ICPC 2017, Argentina, May 22-23, 2017, pp. 324–327. (Co-located ICSE 2017) (Rank C)

- **NH Hoang**, "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*, MobiSys 2016, Singapore, June 25-30, 2016, pp. 30. (Rank B)