

Dr. MUOI TRAN

Vietnamese: Tran Duc Muoi

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Education

- 08/2016 - 03/2022 Ph.D. in computer science, **National University of Singapore** (Singapore)
Advised by Prof. Zhenkai Liang and Prof. Min Suk Kang
Ph.D. thesis: *Handling network attacks exploiting routing information asymmetries*
- 09/2011 - 07/2015 B.S. in computer science, **Vietnam National University** (Vietnam)
Advised by Prof. Hoang Truong
Thesis: *Some improvements for regular expression solving in Z3-Regex*

Experience

- 09/2022 - Postdoctoral researcher, **ETH Zurich** (Switzerland)
I am collaborating with Prof. Laurent Vanbever on network security projects.
- 04/2022 - 08/2022 Research fellow, **National University of Singapore** (Singapore)
I advised graduate students working on blockchain security.
- 08/2020 - 03/2022 Research assistant, **National University of Singapore** (Singapore)
I worked on research projects toward completing my Ph.D.
- 05/2018 - 08/2018 Intern researcher, **IBM Research** (Singapore)
I implemented a banking application based on the HyperLedger framework.
- 01/2016 - 07/2016 Research assistant, **National University of Singapore** (Singapore)
I worked on a verification framework reasoning recursive integer programs.
- 07/2015 - 12/2015 Intern researcher, **National University of Singapore** (Singapore)
I worked on extending the Z3 SAT solver.

Teaching

- 2023
Advanced Topics in Communication Networks
ETH Zurich (Switzerland)
Teaching assistant
- 2020
Network Security
National University of Singapore (Singapore)
Teaching assistant
- 2018
Network Security
National University of Singapore (Singapore)
Teaching assistant
- 2017
System Security
Introduction to Operating Systems
National University of Singapore (Singapore)
Teaching assistant
- 2016
Programming language concepts
National University of Singapore (Singapore)
Teaching assistant

Guest lectures

- 2023
Network security
in *Advanced Topics in Communication Networks*
ETH Zurich (Switzerland)
- 2020 - 2022
Blockchain network security
in *Network Security*
National University of Singapore (Singapore)
- 2020
Blockchain network security
in *Network Security*
Korea Advanced Institute of Science & Technology (Korea)

Supervision

✦ indicates a thesis/project which leads to a peer-reviewed publication

2024

Alessandro Giaconia

ETH Zurich (Switzerland)

Semester project: *Manipulating BGP monitors*

Nikodem Kernbach

ETH Zurich (Switzerland)

Master's thesis: *Exploring Morphing DDoS Attacks*

Alessandro Giaconia

ETH Zurich (Switzerland)

Semester project: *Manipulating BGP monitors*

Dominique Portenier

ETH Zurich (Switzerland)

Semester project: *Stealthier BGP Hijacking Attacks*

2023

Kai De Windt

ETH Zurich (Switzerland)

Bachelor's thesis: *Network-level Attacks Against Ethereum PoS*

Kilian Dasen

ETH Zurich (Switzerland)

Semester project: *The Ramifications of Physical Failures on the Logical Internet*

Nguyet-Anh Duong

Vietnam National University (Vietnam)

Bachelor's thesis: *Securing Cross-chain Bridges with Network-based Obfuscation*

2022

Theo von Arx

ETH Zurich (Switzerland)

Master's thesis: *Generalizing Passive Routing Attacks Against Overlay Networks* ✦

Jonas Konrath

ETH Zurich (Switzerland)

Bachelor's project: *Detection of Large-scale Synchronized BGP Hijacking Attacks*

Publication

- 2024 Muoi Tran, Theo von Arx, Laurent Vanbever
Routing Attacks on Cryptocurrency Mining Pools
45th IEEE Symposium on Security and Privacy (S&P '24)
- 2023 Theo von Arx, Muoi Tran, Laurent Vanbever
Revelio: A Network-Level Privacy Attack in the Lightning Network
8th IEEE European Symposium on Security and Privacy (EuroS&P '23)
- Jaehyun Ha, Seungjin Baek, Muoi Tran, Min Suk Kang
On the Sustainability of Bitcoin Partitioning Attacks
27th Conference on Financial Cryptography and Data Security (FC '23)
- 2022 Seungjin Baek, Hocheol Nam, Yongwoo Oh, Muoi Tran, Min Suk Kang
Short paper: On the Claims of Weak Block Synchronization in Bitcoin
26th Conference on Financial Cryptography and Data Security (FC '22)
- 2021 Muoi Tran, Akshaye Sheno, Min Suk Kang
On the Routing-Aware Peering against Network-Eclipse Attacks in Bitcoin
30th USENIX Security Symposium (USENIX Security '21)
- 2020 Muoi Tran, Inho Choi, Gi Jun Moon, Anh V. Vu, Min Suk Kang
A Stealthier Partitioning Attack against Bitcoin Peer-to-Peer Network
41st IEEE Symposium on Security and Privacy (S&P '20)
- 2019 D. Gong, Muoi Tran, Shweta Shinde, H. Jin, Vyas Sekar, Prateek Saxena, Min Suk Kang
Practical Verifiable In-network Filtering for DDoS defense
39th IEEE International Conference on Distributed Computing Systems (ICDCS '19)
- Muoi Tran, Min Suk Kang, Hsu-Chun Hsiao, W.H. Chiang, S.P. Tung, Y.S. Wang
On the Feasibility of Rerouting-based DDoS Defenses
40th IEEE Symposium on Security and Privacy (S&P '19)
- 2018 Muoi Tran, Loi Luu, Min Suk Kang, Iddo Bentov, Prateek Saxena
Obscuro: A Bitcoin Mixer using Trusted Execution Environments
34th Annual Computer Security Applications Conference (ACSAC '18)

Preprints

Wen-yi Chu, Cheng-Kang Chen, Muoi Tran, Hsun Lee, Laurent Vanbever,
Hsu-Chun Hsiao

Uncovering All Proxy Smart Contracts in Ethereum

Georgia Fragkouli, Pavlos Nikolopoulos, Muoi Tran, Laurent Vanbever,
Katerina Argyraki

Detecting Network Service-Level Agreement Violations with Aether

Wonhoi Kim, Hochoel Nam, Muoi Tran, Amin Jalilov, Zhenkai Liang, Sang Kil Cha,
Min Suk Kang

Testing Fork Resolutions in Multiple Bitcoin and Ethereum Clients

Honors

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|-------------|--|
| 2022 | Dean's Research Excellence Award
National University of Singapore (Singapore) |
| 2021 | Distinguished Shadow Program Committee Reviewer
41st IEEE Symposium on Security and Privacy (United States) |
| 2019 - 2020 | President's Graduate Fellowship
National University of Singapore (Singapore) |
| 2019 | Microsoft Research Asia Fellowship
Microsoft (China)

Dean's Research Achievement Award
National University of Singapore (Singapore) |
| 2017 | I&E Practicum@SoC, 10K SGD
National University of Singapore (Singapore) |
| 2016 - 2019 | Research Scholarship
National University of Singapore (Singapore) |
| 2015 | Young Engineer and Scientist's (Y-E-S) Award
Honda Foundation (Vietnam) |

Services

- 2024
- 45th IEEE Symposium on Security and Privacy (S&P)
Poster PC member
 - 31th ACM Conference on Computer and Communications Security (CCS)
Technical PC member
 - 9th IEEE European Symposium on Security and Privacy (EuroS&P)
Technical PC member
- 2023
- 44th IEEE Symposium on Security and Privacy (S&P)
Poster PC member
- 2022
- 43rd IEEE Symposium on Security and Privacy (S&P)
Poster PC member
- 2021
- 9th International Workshop on Security in Blockchain and Cloud Computing (SBC)
Technical PC member
 - The Network and Distributed System Security Symposium (NDSS) 2021
External reviewer
- 2020
- 42nd IEEE Symposium on Security and Privacy (S&P)
Poster and Shadow PC member
 - 27th ACM Conference on Computer and Communications Security (CCS)
External reviewer
 - 15th ACM Asia Conference on Computer and Communications Security (AsiaCCS)
External reviewer
 - 24th International Conference on Financial Cryptography and Data Security (FC)
External reviewer
- 2017
- 18th World Conference on Information Security Applications (WISA)
External reviewer
 - Int. Conf. on Verification, Model Checking, and Abstract Interpretation (VMCAI)
External reviewer
- 2016
- ACM Object-Oriented Programming, Systems, Languages & Applications (OOPSLA)
External reviewer

Talks

- 2024 When Cryptocurrency Meets Network Security: the layers, attacks, and defenses
EPFL (Switzerland)
Vietnam National University (Vietnam)
- 2022 Attacking and Fixing the Bitcoin Network
Syracuse University (United States)
Vietnam National University (Vietnam)
University of Cambridge (United Kingdom)
- 2021 Handling Network Attacks Exploiting Routing Information Asymmetries
ETH Zurich (Switzerland)
CISPA Helmholtz Center for Information Security (Germany)
- On the Routing-Aware Peering against Network-Eclipse Attacks in Bitcoin
Theory and Practice of Blockchains (Online)
- 2019 Recent Bitcoin Partitioning Attacks
Microsoft Research Asia (China)

References

- Postdoctoral advisor Associate professor, Dr. Laurent Vanbever
ETH Zurich (Switzerland)
lvanbever@ethz.ch
- Main Ph.D. advisor Associate professor, Dr. Min Suk Kang
Korea Advanced Institute of Science and Technology (Korea)
minsukk@kaist.ac.kr
- Caretaker Ph.D. advisor Associate professor, Dr. Zhenkai Liang
National University of Singapore (Singapore)
liangzk@comp.nus.edu.sg