

Tran Duc Muoi (Muoi Tran)

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Introduction

Muoi Tran is a Ph.D. candidate of the Computer Science Department at National University of Singapore. His research aims to enhance the network and blockchain security with a focus on the underlying Internet infrastructure. He proposed an adaptive distributed denial-of-service attack with the power increased by exploiting the routing protocol. Muoi also discovered a stealthy partitioning attack on Bitcoin's network that would influence the future network design of several cryptocurrencies.

Muoi Tran has been publishing papers in highly reputable computer security conferences, including venues such as IEEE S&P. He is the first NUS student in the last 10 years who has published two first-author papers at this privileged conference.

Education

School of Computing, National University of Singapore

Ph.D., Computer Science

Singapore

08/2016 – Present

- Advisor: Dr. Min Suk Kang, Assistant Professor

University of Engineering and Technology, Vietnam National University

B.S., Computer Science

Hanoi, Vietnam

08/2011 – 07/2015

- CAP: 3.49/4.0. Honor program with highest distinction
- Thesis: "Some Improvements for Regular Expression Solving in Z3-Regex"
- Thesis advisor: Associate Professor Hoang Truong

Honors & Awards

Research Achievement Award

2019

- Awarded by School of Computing, National University of Singapore

President's Graduate Fellowship

2019 – 2020

- Awarded by National University of Singapore

I&E Practicum@SoC

2018

- 10,000 SGD grant

NUS Research Scholarship

2016 – 2019

- Awarded by National University of Singapore

Honda Y-E-S Award Vietnam

2015

- Awarded by Honda Foundation to 10 Vietnamese students

Best undergraduate thesis defense

2015

- Awarded by University of Engineering and Technology, Vietnam National University

1st Prize in Student Scientific Research Contest

2015

- Awarded by University of Engineering and Technology, Vietnam National University

GE Foundation Scholar Leadership

2012

- Awarded by GE Foundation to 10 best first-year undergraduate students

Publications

1. A Stealthier Partitioning Attack against Bitcoin Peer-to-Peer Network

San Francisco, CA, USA

Muoi Tran, Inho Choi, Gi Jun Moon, Anh V. Vu, Min Suk Kang

05/2020

- (To Appear) In Proceedings of IEEE Symposium on Security and Privacy (**IEEE S&P**)
- The paper discovers a severe network attack against Bitcoin and 20+ other cryptocurrencies.
- Website: <https://erebus-attack.comp.nus.edu.sg/>

2. Practical Verifiable In-network Filtering for DDoS defense

Dallas, TX, USA

Deli Gong(*), *Muoi Tran*(*), *Shweta Shinde*, *Hao Jin*, *Vyas Sekar*, *Prateek Saxena*, *Min Suk Kang*

07/2019

- (*) Lead authors alphabetically ordered
- In Proceedings of IEEE International Conference on Distributed Computing Systems (**IEEE ICDCS**)
- Acceptance rate: 19.6%

3. On the Feasibility of Rerouting-based DDoS Defenses

San Francisco, CA, USA

Muoi Tran, *Min Suk Kang*, *Hsu-Chun Hsiao*, *Wei-Hsuan Chiang*, *Shu-Po Tung*, *Yu-Su Wang*

05/2019

- In Proceedings of IEEE Symposium on Security and Privacy (**IEEE S&P**)
- Acceptance rate: 11.7% (84 out of 720)

4. Obscuro: A Bitcoin Mixer using Trusted Execution Environments

San Juan, PR, USA

Muoi Tran, *Loi Luu*, *Min Suk Kang*, *Iddo Bentov*, *Prateek Saxena*

12/2018

- In Proceedings of Annual Computer Security Applications Conference (**ACSAC**)
- Acceptance rate: 20.1% (60 out of 299)

Employment

IBM Blockchain Research, IBM Studio

Singapore

Intern Researcher

05/2018 – 08/2018

School of Computing, National University of Singapore

Singapore

Research Assistant

01/2016 – 07/2016

School of Computing, National University of Singapore

Singapore

Intern Researcher

07/2015 – 01/2016

Teaching

School of Computing, National University of Singapore

Singapore

Teaching Assistant

- CS5231 — System Security (Semester I 2017/18)
- CS5321 — Network Security (Semester II 2016/17)
- CS2106 — Introduction to operating systems (Semester II 2016/17)
- CS2104 — Programming language concepts (Semester I 2016/17)

Professional Service

Program committee & Session chair

- NUS Computer Science Research Week 2019

Conference external reviewer

- 18th World Conference on Information Security Applications (WISA'17)
- 18th International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI'17)
- Proceeding of Object-oriented Programming, Systems, Languages, and Applications (OOPSLA'16)

Exhibition presenter

- GovWare 2017 - Singapore International Cyber Week (SICW'17)

References

Dr. Min Suk Kang (advisor)

Assistant Professor

- School of Computing, National University of Singapore
- Email: kangms@comp.nus.edu.sg

Dr. Prateek Saxena (collaborator)

Associate Professor

- School of Computing, National University of Singapore
- Email: prateeks@comp.nus.edu.sg