

# Gaoning Pan

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## EDUCATION

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- **Zhejiang University** Hangzhou, China  
*PhD student in Cyberspace Security; Supervised by Prof. Chunming Wu and Prof. Shouling Ji* Sept. 2018 – Present
- **Huazhong University of Science and Technology** Wuhan, China  
*Bachelor in Telecommunications Engineering; **ranking: 1/182*** Sept. 2014 – June. 2018

## SKILLS

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- **Programming:** Python, C/C++
- **Research Interests:** System and Software Security, Fuzzing, Virtualization Security

## ACADEMIC PUBLICATIONS

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- **Gaoning Pan**, Xingwei Lin, Xuhong Zhang, Yongkang Jia, Shouling Ji, Chunming Wu, Xinlei Ying, Jiashui Wang, and Yanjun Wu. **V-SHUTTLE: Scalable and Semantics-Aware Hypervisor Virtual Device Fuzzing**. ACM Conference on Computer and Communications Security (CCS), 2021. **Best Paper Award**
- **Gaoning Pan**, Yongkang Jia, Qiuhao Li, Xiao Lei, Xuhong Zhang, Qinying Wang, Chenyang Lyu, Xiang Chen, Chunming Wu, Shouling Ji, Yuan Tian. **V-Sounder: Efficient Instruction-Agnostic Virtual CPU Fuzzing via VM State Injection**. IEEE Transactions on Software Engineering (TSE). (Under review)
- **Gaoning Pan**, Yiming Tao, Chunming Wu. **Virtual Machine Exploitation Based on Cross Domain Attack**. ACM Transactions on Software Engineering and Methodology (TOSEM). (Under review)
- Chenyang Lyu, Jiacheng Xu, Shouling Ji, Xuhong Zhang, Qinying Wang, Binbin Zhao, **Gaoning Pan**, Wei Cao, Peng Chen, and Raheem Beyah. **MINER: A Hybrid Data-Driven Approach for REST API Fuzzing**. USENIX Security Symposium 2023.
- Xiang Ling, Lingfei Wu, Saizhuo Wang, **Gaoning Pan**, Tengfei Ma, Fangli Xu, AleX Liu, Chunming Wu, Shouling Ji. **Deep Graph Matching and Searching for Semantic Code Retrieval**. ACM Transactions on Knowledge Discovery from Data (TKDD), 2021.
- Boyang Zhou, **Gaoning Pan**, Chunming Wu, Kai Zhu, Wei Ruan. **Multi-Variant Network Address Hopping to Defend Stealthy Crossfire Attack**. Science China Information Sciences, 2020.
- Shuangxi Chen, **Gaoning Pan**, Chunming Wu, Xinyue Jiang. **Research on Executive Control Strategy of Mimic Web Defense Gateway**. IEEE International Symposium on Networks, Computers and Communications (ISNCC), 2019.

## INDUSTRIAL CONFERENCES

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- **Gaoning Pan**, Xingwei Lin, Xinlei Ying, Jiashui Wang. **Scavenger: Misuse Error Handling. Leading To QEMU/KVM Escape**. Black Hat Asia 2021.
- Yongkang Jia, Xiao Lei, Yiming Tao, **Gaoning Pan**, Chunming Wu. **Timekiller: Leveraging Asynchronous Clock to Escape from QEMU/KVM**. HITBSecConf 2023
- Qiuhao Li, **Gaoning Pan**, Hui he, Chunming Wu. **Hunting and Exploiting Recursive MMIO Flaws in QEMU/KVM**. Black Hat Asia 2022.
- Qiuhao Li, **Gaoning Pan**, Hui he, Chunming Wu. **Matryoshka Trap: Recursive MMIO Flaws Lead to VM Escape**. CanSecWest 2022.

## WORK EXPERIENCE

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| • <b>Zhejiang University AAA Team</b>              | Top international CTF team                        |     |
| • <b>Ant Security Light-year Lab</b>               | Research on Virtual Device Fuzzing                | 1/5 |
| • <b>State Grid Zhejiang Corporation</b>           | Key application research and development projects | 2/7 |
| • <b>Wuhan National Optoelectronics Laboratory</b> | Multimode reliable transmission project           | 3/8 |

## HONORS AND AWARDS

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- 2022, **Pwnie Awards**, Most Innovative Research Nomination Award
- 2022, PhD National Scholarship, Zhejiang University
- 2022, Outstanding Graduate, Zhejiang University
- 2021, **Best Paper Award** of ACM CCS 2021
- 2019, International First Place of HITCON-quals 2019
- 2018, X-NUCA National University Cybersecurity Competition, Ranked 2nd
- 2019, **DEFCON final**, Ranked 4th
- 2019, Codegate-quals, Ranked 5th
- 2018, Undergraduate National Scholarship, Huazhong University of Science and Technology
- 2018, Outstanding Graduate, Huazhong University of Science and Technology
- 2017, Second Prize of Robomasters National College Robot Competition

## SOCIAL CONTRIBUTIONS

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- Led the team to participate in the "Network Protection 2021" network security emergency drill activity in Zhejiang Province, which was highly recognized by the **Zhejiang Provincial Department of Public Security**
- Participated in the compilation of the book "Progress in International Academic Research on Cybersecurity"