Boyuan Yang

CONTACT
INFORMATION

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RESEARCH
INTERESTS

Artificial Intelligence, Embedded System, Heterogeneous Computing, Smart Health

EDUCATION

University of Pittsburgh, Pittsburgh, PA Aug 2018 - May 2025 (expected)
Ph.D. Candidate, Electrical and Computer Engineering
Dissertation: Harnessing operating system for efficient and trustworthy mobile hardware acceleration
Advisor: Prof. Wei Gao

University of Science and Technology of China Aug 2013 - May 2017
B.E., Automation

RESEARCH
EXPERIENCE

Research Assistant Aug 2018 - 2025
Intelligent Systems Lab, University of Pittsburgh

- Discovered weaknesses in commodity smartphone GPU rendering, and designed the system that can eavesdrop user keyboard inputs on smartphones via mobile GPU side channels.
- Developed a human lung function monitoring system based on smartphone devices using ultrasonic signals and AI-assisted data processing. Such system helps to provide easy out-of-clinic lung disease tracking and evaluation.
- Designing and implementation of AI-based system to assist smartphone OS performance optimization, with neural network inference acceleration using heterogeneous hardware on smartphone devices.

Research Assistant Intern Jun 2017 - Aug 2017
Institute of Optics and Electronics, Chinese Academy of Sciences

- Assisted the analysis of control latency in celestial navigation systems.
- Programmed the controlling system of on-device parameter persistent storage.

PUBLICATIONS

Conference Papers

* indicates equal contributions

1. **Boyuan Yang**, Ruirong Chen, Kai Huang, Jun Yang, and Wei Gao. "Eavesdropping user credentials via GPU side channels on smartphones." In *Proceedings of the 27th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, pp. 285-299, 2022.

2. Xingzhe Song*, **Boyuan Yang***, Ge Yang, Ruirong Chen, Erick Forno, Wei Chen, and Wei Gao. "SpiroSonic: monitoring human lung function via acoustic sensing on commodity smartphones." In *Proceedings of the 26th Annual International Conference on Mobile Computing and Networking (MobiCom)*, pp. 1-14. 2020.

3. Kai Huang, **Boyuan Yang**, and Wei Gao. "ElasticTrainer: Speeding up on-device training with runtime elastic tensor selection." In *Proceedings of the 21st Annual International Conference on Mobile Systems, Applications and Services (MobiSys)*, pp. 56-69, 2023.

4. Yihao Liu, Kai Huang, Xingzhe Song, **Boyuan Yang**, and Wei Gao. "Maghacker: eavesdropping on stylus pen writing via magnetic sensing from commodity mobile devices." In *Proceedings of the 18th Annual International Conference on Mobile Systems, Applications, and Services (MobiSys)*, pp. 148-160, 2020.

Posters

5. Ge Yang, **Boyuan Yang**, Yuqi Li, E. Sheffler, Wei Gao, Wei Chen, and Eric Forno. "Smartphone-based ultrasonic respiratory evaluation (SURe) in pediatric asthma patients: A pilot study." In *D60. Improving Health Care Delivery in Pediatric Pulmonary*, pp. A7226-A7226, American Thoracic Society, 2020.

Preprint

6. Jifeng Song, Kai Huang, Xiangyu Yin, **Boyuan Yang**, and Wei Gao. "Achieving Sparse Activation in Small Language Models." *arXiv preprint arXiv:2406.06562*, 2024.

7. Kai Huang, **Boyuan Yang**, and Wei Gao. "Modality Plug-and-Play: Elastic Modality Adaptation in Multimodal LLMs for Embodied AI." *arXiv preprint arXiv:2312.07886*, 2023.

HONORS AND AWARDS	**Student Travel Grant**, ACM
	ACM ASPLOS 2022 Feb 2022
	Android Security Rewards, Google
	CVE-2022-22075 Aug 2022

PUBLIC SPEAKING **Presentations**

1. Eavesdropping user credentials via GPU side channels on smartphones, *the 27th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, Lausanne, Switzerland, Feb 2022.

TEACHING EXPERIENCE

- **Teaching assistant**, ENGR1869 - Intro to Electrical Engineering   Fall 2018
  Dept. of Electrical and Computer Engineering, University of Pittsburgh
- **Teaching assistant**, ECE1673 - Linear Control System   Spring 2019
  Dept. of Electrical and Computer Engineering, University of Pittsburgh
- **Teaching assistant**, ECE1160 - Embedded Computer System Design 1   Fall 2019
  Dept. of Electrical and Computer Engineering, University of Pittsburgh
- **Teaching assistant**, ECE2160 - Embedded Computer System Design 2   Spring 2020
  Dept. of Electrical and Computer Engineering, University of Pittsburgh

PROFESSIONAL ACTIVITIES

Journal Reviewer

- IEEE Transactions on Mobile Computing (TMC), 2020 - 2024
- IEEE Transactions on Industrial Informatics (TII), 2024

Conference Reviewer

- IEEE Conference on Computer Communications (INFOCOM), 2020, 2021
- IEEE/ACM International Symposium on Quality of Service (IWQoS), 2019
- IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, 2019

Conference Organization

- Local Chair, EAI Mobile and Ubiquitous Systems (MobiQuitous) 2022

VOLUNTEER ACTIVITIES

- ⊘ Debian Developer, Debian Project   2018 -