Boyuan Yang

CONTACT
INFORMATION

3700 O'Hara St, Pittsburgh, PA 15213
Dept. of Electrical and Computer Engineering
University of Pittsburgh
Pittsburgh, PA, 15213

Telephone: (412) 315-9024
Email: `by.yang@pitt.edu`
`https://byang.me`

RESEARCH
INTERESTS

Artificial Intelligence, Embedded System, Heterogeneous Computing, Smart Health

EDUCATION

University of Pittsburgh, Pittsburgh, PA Aug 2018 - 2026 (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. **Boyuan Yang***, Xingzhe Song*, 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. Haoming Wang, **Boyuan Yang**, Xiangyu Yin, and Wei Gao. "Never Start from Scratch: Expediting On-Device LLM Personalization via Explainable Model Selection." In *Proceedings of the 23rd Annual International Conference on Mobile Systems, Applications and Services (MobiSys)*, 2025.

5. Qiyao Xue, Xiangyu Yin, **Boyuan Yang**, and Wei Gao. "PhyT2V: LLM-Guided Iterative Self-Refinement for Physics-Grounded Text-to-Video Generation". In *Proceedings of the*

IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), pp. 18826-18836, 2025.

6. Xiangyu Yin, **Boyuan Yang**, Weichen Liu, Qiyao Xue, Abrar Alamri, Goeran Fiedler, and Wei Gao. "ProGait: A Multi-Purpose Video Dataset and Benchmark for Transfemoral Prosthesis Users". In *2025 International Conference on Computer Vision, ICCV 2025* (in press).

7. 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

7. 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

8. Qiyao Xue, Xiangyu Yin, **Boyuan Yang**, and Wei Gao. "PhyT2V: LLM-Guided Iterative Self-Refinement for Physics-Grounded Text-to-Video Generation". *arXiv preprint arXiv:2412.00596*, 2024.

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

10. 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 MobiSys 2025	Jun 2025
	ACM HotMobile 2025	Feb 2025
	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
	• **Teaching Assistant**, ECE1673 - Linear Control System	Spring 2019
	• **Teaching Assistant**, ECE1160 - Embedded Computer System Design 1	Fall 2019
	• **Teaching Assistant**, ECE2160 - Embedded Computer System Design 2	Spring 2020
	Dept. of Electrical and Computer Engineering, University of Pittsburgh	

PROFESSIONAL ACTIVITIES

Journal and Conference Reviewer

• IEEE Transactions on Mobile Computing (TMC)	2020 - 2025
• IEEE Transactions on Industrial Informatics (TII)	2024 - 2025
• IEEE Conference on Computer Communications (INFOCOM)	2020 - 2021
• IEEE/ACM International Symposium on Quality of Service (IWQoS)	2019
• IEEE Intl. Symposium on Personal, Indoor and Mobile Radio Comm. (PIMRC)	2019
• Smart Health	2025

Conference Organization

- Web Chair, IEEE/ACM Conference on Connected Health: Applications, Systems, and Engineering Technologies (CHASE) 2026
- Local Chair, EAI Mobile and Ubiquitous Systems (MobiQuitous) 2022

VOLUNTEER
ACTIVITIES

- ⚭ Debian Developer, Debian Project   2018 -