

Boyuan Yang

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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 Ph.D. Candidate , Electrical and Computer Engineering Dissertation: Harnessing operating system for efficient and trustworthy mobile hardware acceleration Advisor: Prof. Wei Gao	Aug 2018 - Dec 2026 (expected)
	University of Science and Technology of China B.E. , Automation	Aug 2013 - May 2017
RESEARCH EXPERIENCE	Research Assistant Intelligent Systems Lab, University of Pittsburgh	Aug 2018 - 2026
	- 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 Institute of Optics and Electronics, Chinese Academy of Sciences	Jun 2017 - Aug 2017
	- 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
	Boyuan Yang, Ruihong Chen, Kai Huang, Jun Yang, and Wei Gao. "Eavesdropping user credentials via GPU side channels on smartphones." In <i>Proceedings of the 27th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)</i>, pp. 285-299, 2022. Boyuan Yang*, Xingzhe Song*, Ge Yang, Ruihong Chen, Erick Forno, Wei Chen, and Wei Gao. "SpiroSonic: monitoring human lung function via acoustic sensing on commodity smartphones." In <i>Proceedings of the 26th Annual International Conference on Mobile Computing and Networking (MobiCom)</i>, pp. 1-14. 2020. - Kai Huang, Boyuan Yang, and Wei Gao. "ElasticTrainer: Speeding up on-device training with runtime elastic tensor selection." In <i>Proceedings of the 21st Annual International Conference on Mobile Systems, Applications and Services (MobiSys)</i>, pp. 56-69, 2023. - Haoming Wang, Boyuan Yang, Xiangyu Yin, and Wei Gao. "Never Start from Scratch: Expediting On-Device LLM Personalization via Explainable Model Selection." In <i>Proceedings of the 23rd Annual International Conference on Mobile Systems, Applications and Services (MobiSys)</i>, pp. 154-168, 2025. - Qiyao Xue, Xiangyu Yin, Boyuan Yang, and Wei Gao. "PhyT2V: LLM-Guided Iterative Self-Refinement for Physics-Grounded Text-to-Video Generation". In <i>Proceedings of the</i>	

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*, pp. 8984-8993, 2025.
7. Jifeng Song, Xiangyu Yin, **Boyuan Yang**, Kai Huang, Weichen Liu, and Wei Gao. “Attribution-based Sparse Activation in Large Language Models”. In *Proceedings of the Ninth Conference on Machine Learning and Systems (MLSys)*, 2026.
8. Haoming Wang, Qiyao Xue, Weichen Liu, **Boyuan Yang**, Xiangyu Yin, and Wei Gao. “SpatialMind: Spatially Aware On-Device Embodied AI via Viewpoint Integration”. In *Proceedings of the 32nd Annual International Conference on Mobile Computing and Networking (MobiCom)*, 2026 (to appear).
9. 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.

Demos

10. **Boyuan Yang**, Alexander Du, Ozzie Hassel, Jash Uganandan, and Wei Gao. “Demo: Mobile-Claw: A Notification-Driven, Human-Gated Mobile LLM Agent”. In *Proceedings of the 32nd Annual International Conference on Mobile Computing and Networking (MobiCom)*, 2026 (to appear).

Posters

11. 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

12. Weichen Liu, Qiyao Xue, Haoming Wang, Xiangyu Yin, **Boyuan Yang**, and Wei Gao. “Spatial Reasoning in Multimodal Large Language Models: A Survey of Tasks, Benchmarks and Methods.” *arXiv preprint arXiv:2511.15722*, 2025.
13. Jifeng Song, Kai Huang, Xiangyu Yin, **Boyuan Yang**, and Wei Gao. “Achieving Sparse Activation in Small Language Models.” *arXiv preprint arXiv:2406.06562*, 2024.
14. 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 Grants

MLSys 2026	May 2026
ACM MobiSys 2025	Jun 2025
ACM HotMobile 2025	Feb 2025
ACM ASPLOS 2022	Feb 2022

Android Security Rewards, Google

CVE-2022-22075	Aug 2022
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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.

2. Demo: MobileClaw: A Notification-Driven, Human-Gated Mobile LLM Agent, *the 32nd Annual International Conference on Mobile Computing and Networking (MobiCom)*, Austin, TX, USA, Oct 2026 (upcoming).

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
	• ACM Transactions on Computing for Healthcare (HEALTH)	2026
	• 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 -
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