Mr. Huang Yongzhi

Ph.D. in The Hong Kong University of Science and Technology - Guangzhou Campus
Tel: 0086-18002596774
Email: yhuang849@connect.hkust-gz.edu.cn
Address: The Hong Kong University of Science and Technology - Guangzhou Campus, Guangzhou, Guangdong, China
Web: https://www.huangyongzhi.com.cn
Scholar: https://scholar.google.com/citations?user=giGDHQIAAAAJ
Web of Science ResearcherID: HLP-5537-2023
Github: https://github.com/Huang-Yongzhi

Professional Experience

Jul 2022 - Aug 2026(Expected)	Ph.D. in Information Hub, Data Science Analysis (DSA) **The Hong Kong University of Science and Technology, Guangzhou Campus**, Guangzhou, China
Jul 2020 - 2022	Start-up Founder, **Alioth Co., Ltd**, Shenzhen, China (深圳艾琉视智能电子科技有限公司) My company has developed multiple devices that have assisted people with disabilities.
Sep 2017 - Jul 2020	M.Sc. in Computer Science and Technology, **Shenzhen University**, Shenzhen, China
Sep **2015** - Jul **2017** （within 2 years）	B.Sc. in Computer Science and Technology, **Shenzhen University**, Shenzhen, China
Sep **2010** - Jul **2015**	PLA Airborne Forces (Soldier promoted to Officer)

Ph.D. Advisor: ***Prof. Kaishun Wu.***
M.Sc. Advisor: ***A/Prof. Lu Wang****.*

GPA

Master's degree 3.59/4.0 **TOP 1** during Master's degree

Publications & Research Experience

Healthcare

- ***Yongzhi Huang****, J. Zhao, and K. Wu, "Reconstructing Ear Canal Channels for Fine-Grained Detection of Tympanic Membrane Changes,"* ***in Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (ACM IMWUT/UBICOMP'25). CORE A*/ CCF A /CS Ranking***
- ***Yongzhi Huang****, K. Chen, Y Huang, L. Wang, and K. Wu, "Vi-liquid: unknown liquid identification with your smartphone vibration,"* ***in the ACM International Conference on Mobile Computing and Networking (ACM MobiCom'21). CORE A* / CCF A / CS Ranking***
  Public Impact: This work was featured by *New Scientist* and *ACM TechNews* / *Communications of the ACM* for enabling smartphone-based liquid-quality sensing, and was listed by Paper Digest as the #6 most influential MobiCom 2021 paper; cited by MIT DSpace.
- ***Yongzhi Huang****, K. Chen, Y Huang, L. Wang, and K. Wu, "A Portable and Convenient Way for Unknown Liquid Identification with Smartphone Vibration,"* ***in the IEEE Transactions on Mobile Computing (TMC'21). SJR Q1 / CCF A / IF 8***

- ✧ *K. Chen, L. Wang,* ***Yongzhi Huang****, L Wang, and K. Wu, "LiT: Fine-grained Toothbrushing Monitoring with Commercial LED Toothbrush,"* ***in the ACM International Conference on Mobile Computing and Networking (ACM MobiCom'23). CORE A*/ CCF A / CS Ranking***
- ✧ *K. Chen, L. Wang,* ***Yongzhi Huang****, L Wang, and K. Wu, "Optical Sensing-Based Intelligent Toothbrushing Monitoring System" ,* ***in the IEEE Transactions on Mobile Computing (TMC'24). SJR Q1 / CCF A / IF 8***

Smart Industries

- ✧ ***Yongzhi Huang****, Y. Dong, K. Chen, L. Wang, Q. Huang and K. Wu, "Lili: Liquid Quality Monitoring with Light Signal,"* ***in the ACM International Conference on Mobile Computing and Networking (ACM MobiCom'21). CORE A* / CCF A / CS Ranking***
- ✧ ***Yongzhi Huang****, K. Chen, J. Zhao, L. Wang, and K. Wu, "Beverage Deterioration Monitoring Based on Surface Tension Dynamics and Absorption Spectrum Analysis,"* ***in the IEEE Transactions on Mobile Computing (TMC'23). SJR Q1 / CCF A / IF 8***
- ✧ *Q Xia, J Morales,* ***Yongzhi Huang****, T Hara, K Wu, H Oshima, M Fukuda, "Self-supervised Learning for Complex Activity Recognition through Motif Identification Learning,"* ***in the IEEE Transactions on Mobile Computing (TMC'23). SJR Q1 / CCF A / IF 8***
- ✧ *L. Wang, B. Guo, H. Wang, X. Li,* ***Yongzhi Huang****, J. Yao, and K. Wu, "SenLoRa: Integrated Sensing and Communication with Ambient LoRa,"* ***in Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (ACM IMWUT/UBICOMP'25). CORE A* / CCF A / CS Ranking***

Intelligent Life

- ✧ *K. Chen,* ***Yongzhi Huang****, Y. Chen, H. Zhong, L. Lin, L. Wang, and K. Wu, "LiSee: A headphone that provides all-day assistance for blind and low-vision users to reach surrounding objects,"* ***in Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (ACM IMWUT/UBICOMP'22). CORE A* / CCF A / CS Ranking***
- ✧ *S. Zhong,* ***Yongzhi Huang****, R. Ruby, L. Wang, Y. Qiu, and K. Wu, "Wi-Fire: Device-free Fire Detection using WiFi Networks,"* ***in the IEEE International Conference on Communications (IEEE ICC'17). CORE B/CCF C***
- ✧ ***Yongzhi Huang****, Q. Dai*, L. Wang, R. Ruby, and K. Wu, "mm-Humidity: Fine-grained Humidity Sensing with Millimeter-Wave Signals,"* ***in the IEEE International Conference on Parallel and Distributed Systems (IEEE ICPADS'18).*** *(* Contributed Equally)* ***CORE B/CCF C***
- ✧ ***Yongzhi Huang****, S. Cai, L. Wang, and K. Wu, "Oinput: A Bone-Conductive QWERTY Keyboard Recognition for Wearable Device,"* ***in the IEEE International Conference on Parallel and Distributed Systems (IEEE ICPADS'18). CORE B/CCF C***

IoT Security

- ✧ *T. Li*,* ***Yongzhi Huang****, L. Jiang, Q. Xie, C. Liu, W. Du, L. Wang, and K. Wu, "FedWMSAM: Fast and Flat Federated Learning via Weighted Momentum and Sharpness-Aware Minimization,"* ***in International Joint Conference on Artificial Intelligence (NEURIPS'25). CORE A* / CCF A / CS Ranking***
- ✧ *T. Li*,* ***Yongzhi Huang****, L. Jiang, Q. Xie, C. Liu, W. Du, L. Wang, and K. Wu, "FedWCM: Unleashing the Potential of Momentum-based Federated Learning in Long-Tailed Scenarios,"* ***In Proceedings of the 54th International Conference on Parallel Processing (ICPP'25).*** *(**

Contributed Equally) ***CORE A / CCF B***

- ✧ *T. Li*,* ***Yongzhi Huang****, L. Jiang, Q. Xie, C. Liu, W. Du, L. Wang, and K. Wu, "FedWCM: Unleashing the Potential of Momentum-based Federated Learning in Long-Tailed Scenarios,"* ***arVix.*** *(* Contributed Equally)*
- ✧ ***Yongzhi Huang****, J. Zhao*, Q. Xie, W. Wang, L. Wang, and K. Wu, "Chameleon: An Adaptive System for Overlapping Keystroke Signal Separation and Identification,"* ***in the IEEE International Conference on Parallel and Distributed Systems (IEEE ICPADS'24)****. (* Contributed Equally)* ***CORE B/CCF C***
- ✧ *Q. Liao,* ***Yongzhi Huang****, Y. Huang, Y. Zhong, H, Jin, and K. Wu, "MagEar: Eavesdropping via Audio Recovery using Magnetic Side Channel,"* ***in Proceedings of the 20th ACM International Conference on Mobile Systems, Applications, and Services (ACM Mobisys'22). CORE A/ CCF B/CS Ranking***
- ✧ *Q. Liao,* ***Yongzhi Huang****, Y. Huang, and K. Wu, "An Eavesdropping System Based on Magnetic Side-Channel Signals Leaked by Speakers,"* ***in ACM Transactions on Sensor Networks (TOSN'23). SJR Q1 / CCF B/ IF 4***
- ✧ *W. Wang, Q. Xie,* ***Yongzhi Huang****, Y. Ding, L. Zhang, D. Gao, C. Su, J Rodrigues, "Attack Analysis and Enhanced Authentication Protocol Design for Vehicle Networks,"* ***in the IEEE Transactions on Dependable and Secure Computing (TDSC). CCF A /SJR Q1 / IF 8***
- ✧ *Q. Xie, H. Guo, W. Wang,* ***Yongzhi Huang****, L. Jiang, J. Wu, S. Zhong, L. Wang, K. Wu, "HARMONY: A Privacy-preserving and Sensor-agnostic Tele-monitoring system,"* ***in International Joint Conference on Artificial Intelligence (IJCAI'25). CORE A* / CCF A / CS Ranking***
- ✧ *Q. Xie, S. Jiang, L. Jiang,* ***Yongzhi Huang****, Z. Zhao, S. Khan, W. Dai, Z. Liu, K. Wu, "Efficiency Optimization Techniques in Privacy-Preserving Federated Learning with Homomorphic Encryption: A Brief Survey,"* ***in the IEEE Internet of Things Journal (IOTJ'24). SJR Q1 / IF 11***
- ✧ *Q. Liao, J. Lin,* ***Yongzhi Huang****, G. Gong, and K. Wu, "CamFirm: A pair of headphones could guide you to the spy camera,"* ***in the 23rd International Conference on Pervasive Computing and Communications (PerCom'25). CORE A* / CCF B***
- ✧ *Q. Xie, W. Wang,* ***Yongzhi Huang****, L. Jiang, Q. Xie, S. Khan, and K. Wu, "LiteCrypt: Enhancing IoMT Security with Optimized HE and Lightweight Dual-Authorization,"* ***in the IEEE International Conference on Parallel and Distributed Systems (IEEE ICPADS'24)****.* ***CORE B/CCF C***

Patent

- ✧ *Wu Kaishun,* ***Huang Yongzhi****, Wang Lu, Zhong Shuxin, Yang Hailiang, "Methods and Systems for Indoor Fire Detection and Alarm based on Wireless Signal Transmission," application date: 2017.03.10, application number: 2017101410168, China, ranked 3rd.*
- ✧ *Wu Kaishun,* ***Huang Yongzhi****, Dai Qingming, Wang Lu, "Humidity Sensing and Detection Method and System based on Millimeter-Wave Signal," application date: 2018.09.05, application number: 20181810308394.*
- ✧ *Wu Kaishun,* ***Huang Yongzhi****, Wang Lu, Cai Shaotian, Zhang Jianhao, "An Intelligent Input Method and System based on Bone Conduction," application date: 2019.03.20, application number: 201910213226.2.*
- ✧ *Wu Kaishun,* ***Huang Yongzhi****, Wang Lu, Cai Shaotian, Zhang Jianhao, "An Intelligent Input*

Method and System based on Bone Conduction," application date: 2019.03.20, application number: PCT/CN2019/078870.

- ✧ *Wu Kaishun, **Huang Yongzhi**, Wang Lu, Zhong Shuxin, Yang Hailiang, " Methods and Systems for Indoor Fire Detection and Alarm based on Wireless Signal Transmission ," application date: 2018.09.30, application number: PCT/CN2017/084237.*
- ✧ *Wu Kaishun, **Huang Yongzhi**, Wang Lu, Chen Kaixin, "An Auxiliary Perception Method and System Based On Sensory Substitution," application date: 2019.12.02, application number: 201911210888.0-*
- ✧ *Wu Kaishun, Dong Yinying, **Huang Yongzhi**, Wang Lu, Yang Ruixiong, " Liquid Identification Method and System by Surface Capillary Wave Measurement Based on Structured Light," application date: 2019.11.26, application number: 201911176425.7*
- ✧ *Wu Kaishun, **Huang Yongzhi**, Kaixin Chen, Wang Lu, Kaijie Zan, " Method and System for Identifying Liquid using Mobile Phone ," application date: 2020.09.02, application number: 202010838592.X*
- ✧ *[US Patent]Wu Kaishun, **Huang Yongzhi**, Wang Lu, Kaixin Chen, " AUXILIARY SENSING METHOD AND SYSTEM BASED ON SENSORY SUBSTITUTION ," Pub. Date: Jun. 3, 2021, Pub. No .: US 2021/0168551 A1*
- ✧ *Wang Lu,, **Huang Yongzhi**, Dong Yinying, Wu Kaishun, Lu Runping, " A Low Power Consumption and Low Price Liquid Monitoring Method ," application date: -, application number:-.*
- ✧ *Wang Lu,, **Huang Yongzhi**, Jie Xiao, Huitong Jin, Wu Kaishun, " A Sound Coding Method For The Blind Auxiliary Perception System With Sensory Substitution ," application date: -, application number:-.*
- ✧ *Wang Lu,, **Huang Yongzhi**, Jie Xiao, Huitong Jin, Wu Kaishun, " A Yoga Action Recognition Mat Based On Piezo Film ," application date: -, application number:-.*
- ✧ *Kaishun Wu, Wang Lu, Jiamin Jiang, **Huang Yongzhi**, Hong Liu, " A recovery method for Low-Power Wide-Area Network based on Cluster ," application date: -, application number: GZPA00026.*
- ✧ *[US Patent]Wu Kaishun, **Huang Yongzhi**, Wang Lu, LI Xiaoshen, Hong Liu, Li Li, Min Sun, " Low-power wide area network integrated sensing and communication method based on channel sensing and reinforcement learning ," Pub. Date: Jan. 3, 2025, Pub. No .: US 2025/ 18911949*
- ✧ *Kaishun Wu, **Huang Yongzhi**, Guangye Li, " Methods and systems for art appreciation based on touch screens and multi-sensory feedback for the blind ," application date: 2025.04.08, application number:.*
- ✧ ***Huang Yongzhi**, " Glasses ," application date: -, application number: CN222723306U.*
- ✧ ***Huang Yongzhi**, " A Sensory-Substitution Assistive Eyeglass Device for Blind and Visually Impaired Users ," application date: 2023.05.09, application number: CN218979652U.*

Funding Support

Futian District Health System Research Project, Shenzhen, Key Participant, "Development of an Artificial Intelligence–Based Diagnostic Model for Breast Intraductal Papilloma Using Ultrasound Images," Grant No. FTWS2025087, 2025–present..

Assisted with 12 national and provincial funding proposals and award submissions in integrated sensing-communication-computing, health sensing, smart city, low-altitude economy networking,

and liquid sensing; 7 were awarded/approved, and 1 was shortlisted for the final round.

Contributions: Contributed to technical drafting, research roadmap organization, narrative refinement, milestone and timeline preparation, preliminary figure development, and cross-team coordination for submission materials.

Selected Proposal Portfolio

Provincial Key Laboratory Establishment (Integrated Sensing-Communication-Computing for Ubiquitous IoT)	**Approved**
Key Laboratory Establishment (Health Sensing)	**Approved**
National Science Foundation Proposal (Sensing-Computing Collaboration, 2025)	**Funded**
Provincial Talent & Expertise Introduction Base Program	**Approved**
Provincial Award Nomination (Cloud-edge-device integrated system, 2025; 5G+ Smart City, 2022)	**Nominated**
Provincial Engineering Technology Center Establishment	**Approved**

Academic Service

Reviewer / External Reviewer for selected leading journals and conferences, including:

Journals:
IEEE Transactions on Mobile Computing (**TMC**);
IEEE Journal on Selected Areas in Communications (**JSAC**);
IEEE Communications Magazine (**ComMag**);
IEEE Internet of Things Journal (**IoT-J**);
IEEE Transactions on Neural Networks and Learning Systems (**TNNLS**);
Journal of Computer.

Conferences:
Conference on Neural Information Processing Systems (**NeurIPS**);
Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies / ACM UbiComp, IEEE Journal on Selected Areas in Communications (**IMWUT/UbiComp**);
AAAI Conference on Artificial Intelligence (**AAAI**);
International Joint Conference on Artificial Intelligence (**IJCAI**);
ACM CHI Conference on Human Factors in Computing Systems (**CHI**);
IEEE International Conference on Parallel and Distributed Systems (**ICPADS**).

Honors and Awards

I have won **Contest Awards** as an Individual participant and as a Team Director using my research outcomes.
There are some **Representative Awards**:

Corporate Project Awards from My Company (*Alioth Co., Ltd*)

2021	"Nanshan Entrepreneurial Star" Entrepreneurship Competition (This is the "Oscar" of startup competitions.)	***The Star*** ***(7/20000+)***

2021	"Shen Chuang Sai" Shenzhen Innovation and Entrepreneurship Competition	***Final Quota（100/31000+）***
2020	National College Students E-commerce "Innovation, Creativity and Entrepreneurship" Competition	***Second Prize (18/50000+)***
2021	China International "Internet Plus" College Student Innovation and Entrepreneurship Competition - National Division	***Bronze Award***
2021	International "Internet Plus" College Students Innovation and Entrepreneurship Competition	***Gold Award***
2020	China International "Internet Plus" College Students Innovation and Entrepreneurship Competition - Guangdong Division	***Silver Award (12/157800+)***
2020	China University Student Service Outsourcing Innovation and Entrepreneurship Competition - Nation Division (Based on Project: *VA-eyes*)	***Third Prize***
2020	National College Students E-commerce "Innovation, Creativity and Entrepreneurship" Competition	***Best Innovation Award***
2022	Shenzhen "Disability Integration" disabled entrepreneurship and Innovation competition	***Silver Award (3/500+)***
2020	"Challenge Cup" Guangdong University Student Entrepreneurship Competition - Guangdong Division (Based on Project: *"FaceSensor"*)	***Silver Award (129/7400+)***
2020	"Challenge Cup" Guangdong University Student Entrepreneurship Competition - Guangdong Division (Based on Paper Outcome: *"Oinput"* System)	***Bronze Award (~450/7400)***

Academic Project Awards

2021	"Challenger Cup" College students' extracurricular academic science and technology works (Based on *Pat*ent Outcome: *US 2021/0168551*)	***Second Prize***
2019	"Arrow Cup" Chinese College Student Innovation Competition (Based on Paper Outcome: *WireFire* System)	***Outstanding Winner (TOP1)***
2020	Chinese College Students Computer Design Competition - Nation Division (Based on Paper Outcome: *"Oinput"* System)	***Top Prize***
2020	Chinese College Students Computer Design Competition - Nation Division (Based on Paper Outcome: *"mm-Humidity"* System)	***Third Prize***
2020	China University Student Service Outsourcing Innovation and Entrepreneurship Competition---Nation Division (Based on Project: *"FaceInput"*)	***Third Prize***
2017	Challenge Cup for Students Extracurricular Academic & Scientific Technology Competition (Based on Paper: WiFi Based Indoor Fire Detection System)	*Third Prize*
2017	Challenge Cup for Students Extracurricular Academic & Scientific Technology Competition (Based on Project: Optimization of NUMA Structure Sensitive Parallel Computing)	*Winning Prize*
2019	National college students "Longteng Cup" innovation and creativity competition	*First Prize*

Disciplinary Competition Prizes

2017	Interdisciplinary Contest in Modeling	***Meritorious Winner(~7%)***
2016	Interdisciplinary Contest in Modeling	***Meritorious Winner(~7%)***
2015	National Undergraduate Electronic Design Competition	***First Prize***
2017	Star of Double Innovations	***First Prize***
2016	Mathematical Modeling Contest	*Third Prize*
2018	Star of Double Innovations	*Third Prize*

Scholarships

2015	Academic Excellence Scholarship	***Special Award (特等奖学金)***
2017	Academic Scholarship for Graduate Students	***Special Award (特等奖学金)***
2016	Excellent Student of Academic Performance	***First Prize***
2017	Exam-free Candidates Scholarship	***First Prize***
2018	Academic Scholarship for Graduate Students	***First Prize***
2019	International Short-Term Academic Scholarship	

Language Ability

CET-4: 504
IELTS 6.5 (With Listening 7.5)

Special Skill Hobby

I am conducting interdisciplinary experimental research across biology, chemistry, and materials science, aimed at addressing challenges in sensor development and industrialization. Although my research spans multiple fields, it follows a structured path to cover all aspects essential for advancing next-generation sensors and their practical applications.

In addition, I actively collaborate with various enterprises, fostering strong industry-academia partnerships. Through project coordination and management, I facilitate the translation of research into real-world solutions, driving technological innovation and contributing to societal progress.

I am an avid reader, consistently reading 12 books each year, covering a wide range of topics, including history, sociology, futurology, and management.

For more information, please visit my personal website: https://www.huangyongzhi.com.cn/.

Teaching Experience

Teaching Experience:

2023	Fundamentals of Weaponry and Design Theory	***Lecturer***

Teaching Assistance:

2023	UG ENGLISH IMMERSION CAMP 2023	***Course Lecturer***
2024	UFUG 1601 - Introduction to Computer Science	***Lab Lecturer***
2024	DSAA 5021 - Data Science Computing	***Teaching Assistant***