Huanle Zhang

Postdoc Scholar
Department of Computer Science
University of California, Davis
Davis, CA 95616

Email: dtczhang@ucdavis.edu
Web: https://www.huanlezhang.com
GitHub: https://www.github.com/dtczhl
Phone: (530) 760-5938

RESEARCH INTERESTS

Ubiquitous Computing: Mobile Systems and Applications; Internet of Things (IoT); Artificial Intelligence (AI); Federated Learning (FL)

Wireless Networking: Design and analysis of wireless networks; Wi-Fi; Bluetooth Low Energy (BLE)

EDUCATION

Ph.D. in Computer Science,   Sep. 2016 - Sep. 2020
University of California, Davis, California, USA
Advisor: Prasant Mohapatra
Dissertation: Accelerating Vision Systems on Mobile Devices

M.S. in Communication Engineering,   Sep. 2011 - June 2014
University of Electronic Science and Technology of China, Chengdu, Sichuan, China
Advisor: Jian Liu

B.S. in Communication Engineering,   Sep. 2007 – June 2011
Hangzhou Dianzi University, Hangzhou, Zhejiang, China
Advisor: Na Ying

AWARDS

- **AT&T Student Fellowship** for project: Deep Learning for Mobile Immerse Computing. Mentor: Bo Han, Feb. 2019 - Feb. 2020

- **Best Paper Award** at the ACM Conference on Embedded Networked Sensor Systems (SenSys) for the work titled "When Pipelines Meet Fountain: Fast Data Dissemination in Wireless Sensor Network", 2015.

- **Demo Runner-up Award** at the ACM Workshop on Mobile Computing Systems and Applications (HotMobile) for the demo titled "AIDE: Augmented Onboarding of IoT Devices at Ease", 2019.

- **Nokia National Patent Filing Award** for the patent titled "Augmented Onboarding of Internet-of-Things Devices", 2019.

- **Travel Grant Awards** for IEEE GLOBECOM 2013 and ACM HotMobile 2019.

- **National Scholarship for Graduate Students of China**, 2014.

- **Honorable Mention** for Interdisciplinary Contest in Modeling, 2010.

PATENTS (author list in alphabetical order by last name)

1. Mostafa Uddin, Fang Hao, Sarit Mukherjee and Huanle Zhang, *Augmented Onboarding of Internet-of-Things Devices*, US Patent 20200228958A1.

2. Bo Han, Cheuk Yiu Ip, Huanle Zhang, and Eric Zavesky, *Method for Accelerating Three-dimensional Object Segmentation with Point Cloud Simplification*, US Patent App.

PUBLICATIONS

JOURNALS

1. Pengfei Hu, Parth H. Pathak, **Huanle Zhang**, Zhicheng Yang, and Prasant Mohapatra. *High Speed LED-to-Camera Communication using Color Shift Keying with Flicker Mitigation*. IEEE Transactions on Mobile Computing (**TMC**), 19(7):1603–1617, 2020.

2. **Huanle Zhang**, Wan Du, Mo Li, Kaishun Wu, and Prasant Mohapatra. *StrLight: An Imperceptible Visible Light Communication System with String Lights*, IEEE Transactions on Mobile Computing (**TMC**), 18(7):1674–1687, 2019.

3. **Huanle Zhang**, Wan Du, Pengfei Zhou, Mo Li, and Prasant Mohapatra. *An Acoustic-based Encounter Profiling System*, IEEE Transactions on Mobile Computing (**TMC**), 17(8):1750–1763, 2018.

4. Wan Du, Jansen Christian Liando, **Huanle Zhang**, and Mo Li. *Pando: Fountain-Enabled Fast Data Dissemination with Constructive Interference*, IEEE/ACM Transactions on Networking (**TON**), 25(2):820–833, 2017.

5. **Huanle Zhang**, Jian Liu, and Haili Shi. *Analysis of Accessing to the Nearest and to the Strongest Base Station in Femtocell Networks*, International Journal of Communication Systems (**IJCS**), DOI:10.1002/dac.2851, 2014.

6. **Huanle Zhang**, Jian Liu, Yu Fu, and Niangeng Guo. *OFDMA Femtocell Gateway Scheduling Based on Coloring*, Advances in Information Sciences and Service Sciences (**AISS**), 5(12):192–203, 2013.

CONFERENCES AND WORKSHOPS

1. Rex Liu, Sarina A Fazio, **Huanle Zhang**, Albara Ah Ramli, Xin Liu and Jason Yeates Adams. *Early Mobility Recognition for Intensive Care Unit Patients Using Accelerometers*. KDD Workshop on Artificial Intelligence of Things (**AIoT**), Singapore, 2021.

2. **Huanle Zhang**, Bo Han, Cheuk Yiu Ip and Prasant Mohapatra. *Slimmer: Accelerating 3D Semantic Segmentation for Mobile Augmented Reality*. IEEE International Conference on Mobile Ad-Hoc and Smart Systems (**MASS**), Delhi NCR, India, 2020.

3. **Huanle Zhang**, Bo Han and Prasant Mohapatra. *Toward Mobile 3D Vision*. IEEE International Conference on Computer Communications and Networks (**ICCCN**), Honolulu, Hawaii, USA, 2020.

4. Tianbo Gu, Allaukik Abhishek, Hao Fu, **Huanle Zhang**, Debraj Basu and Prasant Mohapatra. *Towards Learning-automation IoT Attack Detection through Reinforcement Learning*. IEEE International Symposium on A World of Wireless, Mobile and Multimedia Networks (**WoWMoM**), Cork, Ireland, 2020.

5. **Huanle Zhang**, Mostafa Uddin, Fang Hao, Sarit Mukherjee, and Prasant Mohapatra. *AIDE: Augmented Onboarding of IoT Devices at Ease*. ACM Workshop on Mobile Computing Systems and Applications (**HotMobile**), Santa Cruz, USA, 2019.

6. **Huanle Zhang**, Ahmed Elmokashfi, and Prasant Mohapatra. *WiFi and Multiple Interfaces: Adequate for Virtual Reality?*. IEEE Conference on Parallel and Distributed Systems (**ICPADS**), Singapore, 2018.

7. **Huanle Zhang**, Wan Du, Pengfei Zhou, Mo Li, and Prasant Mohapatra. *DopEnc: Acoustic-based Encounter Profiling Using Smartphones*, ACM Conference on Mobile Computing and Networking (**MobiCom**), New York, USA, 2016.

8. Wan Du, Jansen Christian Liando, **Huanle Zhang**, and Mo Li. *When Pipelines Meet Fountain: Fast Data Dissemination in Wireless Sensor Network*, ACM Conference on Embedded Networked Sensor Systems (**SenSys**), Seoul, South Korea, 2015.

9. **Huanle Zhang**, Jian Liu, Yupeng Jia, and Yulu Ma. *Analysis of Femtocell Coverage Fraction and Isolated Probability Using Stochastic Geometry*, IEEE Global Communications Conference (**GLOBECOM**), Atlanta, USA, 2013.

10. **Huanle Zhang**, Yu Fu, and Jian Liu. *Optimal Transmission Distance of Mean Progress and Mean Transport in Device-to-device Networks*, International Conference on Cyberspace Technology (**CCT**), Beijing, China, 2013.

11. **Huanle Zhang**, Jian Liu, and Niangeng Guo. *A Tractable Framework for Power Consumption in Femtocell Networks*, International Conference on Multimedia Information Networking and Security (**MINES**), Beijing, China, 2013.

12. **Huanle Zhang**, and Jian Liu. *Policy on Downlink Access of Femtocell Based on OFDMA in Dense Employment Residential Environment*, International Conference on Software Engineering and Information System (**SEIS**), Shijiazhuang, China, 2013.

POSTERS AND DEMOS

1. Zhicheng Yang, Parth H. Pathak, Muchen Wu, Tingting Zhu, Junai Gan, **Huanle Zhang**, Jingyuan Zheng, and Prasant Mohapatra. *Poster: Non-invasive Soluble Sugar Content Estimation using Millimeter-wave*, Aligning the Food System for Improved Nutrition in Animal Source Foods, UC Davis, 2019.

2. **Huanle Zhang**, Zhicheng Yang, and Prasant Mohapatra. *Poster: Wireless Access to Ultimate Virtual Reality 360-Degree Video*, ACM/IEEE International Conference on Internet of Things Design and Implementation (**IoTDI**), 2019.

3. **Huanle Zhang**, Mostafa Uddin, Fang Hao, Sarit Mukherjee, and Prasant Mohapatra. *Poster and Demo: AIDE: Augmented Onboarding of IoT Devices at Ease*. ACM Workshop on Mobile Computing Systems and Applications (**HotMobile**), Santa Cruz, USA, 2019.

4. Zhicheng Yang, Parth H Pathak, Jianli Pan, Mo Sha, **Huanle Zhang**, and Prasant Mohapatra. *Poster: Blockage-aware Deployment of 60 GHz Millimeter-wave WLANs*, NSF Millimeter-Wave Research Coordination Network Workshop (**mmW RCN workshop**), Montreal, Canada, 2019.

ARXIV

1. Albara Ah Ramli, **Huanle Zhang**, Jiahui Hou, Rex Liu, Alina Nicorici, Daniel Aranki, Corey Owens, Poonam Prasad, Craig McDonald, and Erik Henricson. *Gait Characterization in Duchenne Muscular Dystrophy (DMD) Using a Single-Sensor Accelerometer: Classical Machine Learning and Deep Learning Approaches*, arXiv: 2105.06295.

2. Rex Liu, Albara Ah Ramli, **Huanle Zhang**, Esha Datta, Erik Henricson, and Xin Liu. *An Overview of Human Activity Recognition Using Wearable Sensors: Healthcare and Artificial Intelligence*, arXiv:2103.15990.

3. **Huanle Zhang**, and Jeonghoon Kim. *Towards a Federated Learning Framework for Heterogeneous Devices of Internet of Things*, arXiv:2105.14675

4. **Huanle Zhang**, Ahmed Elmokashfi, Zhicheng Yang, and Prasant Mohapatra, *Wireless Access to Ultimate Virtual Reality 360-Degree Video at Home*, arXiv:1812.01777

RESEARCH AND WORK EXPERIENCE

Postdoc Researcher   Oct. 2020 - present
University of California, Davis, CA, USA
Advisor: Xin Liu

- NSF Convergence Accelerator 2020: Data-Driven Disease Control and Prevention in Veterinary Health. https://bioportal.ucdavis.edu
- AI Institute for Food Systems. https://aifs.ucdavis.edu/
- Army Research Project: Generalized Game-Theoretic Models for Multiple Defenders and Agile Attackers

Research Intern   June 2019 - Aug. 2019
AT&T Labs – Research, Bedminster, New Jersey, USA
Mentors: Bo Han, and Cheuk Yiu Ip

- Developed a technique to reduce the computation and memory overheads of 3D scene segmentation and meanwhile increase accuracy. Applied data simplifications to reduce the size of point clouds. Conducted measurements of 3D mixed reality DNN models on mobile devices.

Research Intern   June 2018 - Aug. 2018
Bell Labs, Crawford Hill, New Jersey, USA
Mentors: Mostafa Uddin, Fang Hao, and Sarit Mukherjee

- Developed a mobile system for onboarding IoT devices using received signal strength. Designed voting-based algorithms to associate visual objects with their beacon IDs. Proposed an augmented reality based mechanism to systematically select measurement locations and duration.

Research Intern   March 2018 - June 2018

Microsoft Research Asia, Beijing, China

Mentor: Yunxin Liu

- Researched on distributed models, model compression, and image super-resolution. Designing gate networks to guide input of different complexity to optimized backbone neural networks of various capabilities in order to speed up the overall system inference and increase system accuracy.

Research Intern   July 2017 - Sep. 2017

Simula Research Laboratory, Fornebu, Norway

Mentor: Ahmed Elmokashfi

- Developed a MPTCP based system for reducing delays and jitters of TCP and UDP packets. Conducted research on wireless networking for virtual reality 360 videos. Surveyed the challenges of supporting different levels of VR 360 at homes.

Project Officer   Aug. 2014 - June 2016

Nanyang Technological University, Singapore

Advisor: Mo Li

- Developed a visible light communication system that uses string lights composed of a large number of small LEDs to transmit data without light flickers. Developed an acoustic system for profiling encounters, which leverages the Doppler effect to infer intentions. Developed a fast data dissemination method for sensor networks by leveraging constructive interference.

TEACHING EXPERIENCE

- **Teaching Assistant:** Data Structure and Programming (ECS 60). 2017 Fall, University of California, Davis.

PROFESSIONAL SERVICES

- **Technical Program Committee:** ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc): 2021; International Conference on Wireless and Mobile Communications (ICWMC) 2020-21; International Conference on Evolving Internet (INTERNET) 2020-21.

- **Journal Reviewer:** MDPI Sensors 2021; MDPI Technologies 2021; MDPI Applied Sciences 2021; ACM Transactions on Internet of Things (TIOT) 2020; IEEE Transactions on Mobile Computing (TMC) 2019; IEEE Transactions on Service Computing (TSC) 2019; IEEE Transactions on Vehicular Technology (TVT) 2019; International Journal of Sensors, Wireless Communications and Control (SWCC) 2019; EURASIP Journal on Wireless Communications and Networking (JWCN) 2015; IEEE Internet of Things Journal (IoT) 2013-14, 2019-20.

- **Conference Reviewer:** ACM Symposium on User Interface Software and Technology (UIST) 2021; IEEE Global Communications Conference (GLOBECOM) 2014.