

# ZHUANGDI ZHU

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Google Scholar Profile

## EDUCATION

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### Michigan State University, USA

- Ph.D., Computer Science.

*Jan 2017 - Jun 2022*

### Australian National University, Australia

- Exchange Program, Computer Science.

*July 2014 - Dec 2014*

### Nanjing University of Science and Technology, China

- B.S., Computer Science.

*Sept 2011 - Jun 2015*

## RESEARCH INTERESTS

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Zhuangdi's research interest focuses on principled *machine learning*. Her doctoral research is dedicated to designing *knowledge transfer* algorithms for *reinforcement learning* and *distributed machine learning*. She aims to developing machine learning technique to address real-world needs. She has developed effective machine learning solutions for various applications, including wireless communication, cloud computing, algorithmic trading, human computer interaction, Internet of Things, etc. Zhuangdi's strength also resides in integrated research, with her broader research intersected with *systems* and *wireless networking*.

## PROFESSIONAL EXPERIENCE

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### Meta

*PhD Intern, Machine Learning Track*

*Jun 2021 - Sep 2021*

*California, United States*

- Designed and delivered production-level ads-ranking models that optimize towards long-term revenues following reinforcement learning principles;
- Online testing on facebook's real traffic indicate that this prototype model has positive effects on user's long term behavior.

### Meta

*PhD Intern, Machine Learning Track*

*Jun 2019 - Aug 2019*

*Washington, United States*

- Delivered online machine learning pipelines to fight against image abuse at Facebook Pages.
- Designed and built highly robust classifiers to detect unoriginal image posting in real-time.

### Google

*PhD Intern, Human Computer Interaction*

*May 2018 - Aug 2018*

*California, United States*

- Designed a wearable platform to enable real-time gesture interactions;
- Implemented a multi-classification model with optical and motion sensors inputs that recognize user gestures in real-time.

## PUBLICATIONS

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### CONFERENCE ARTICLES:

1. Zhuangdi Zhu, Junyuan Hong, Steve Drew, and Jiayu Zhou. Resilient and Communication Efficient Learning for Heterogeneous Federated Systems. *The 39th International Conference on Machine Learning (ICML 2022)*.
2. Zhuangdi Zhu, Kaixiang Lin, Bo Dai, and Jiayu Zhou. Self Adaptive Imitation Learning: Learning Sparse Rewarded Tasks from Sub-Optimal Demonstrations. *The 36th AAAI Conference on Artificial Intelligence (AAAI 2022)*.
3. Shuyang Yu\*, Zhuangdi Zhu<sup>\*1</sup>, Boyang Liu, Anil Jain, and Jiayu Zhou. Robust Unsupervised Domain Adaptation from a Corrupted Source. *the 22nd IEEE International Conference on Data Mining (ICDM 2022)*.
4. Zhuangdi Zhu, Junyuan Hong, and Jiayu Zhou. Data-Free Knowledge Distillation for Heterogeneous Federated Learning. *The 38th International Conference on Machine Learning (ICML 2021)*.
5. Junyuan Hong, Zhuangdi Zhu, and Jiayu Zhou. Federated Adversarial Debiasing for Fair and Transferable Representations. *The 27th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2021)*.
6. Zhuangdi Zhu, Kaixiang Lin, Bo Dai, and Jiayu Zhou. Off-Policy Imitation Learning from Observations. *The 34th Conference on Neural Information Processing Systems (NeurIPs 2020)*.
7. Yushi Cheng, Xiaoyu Ji, Wenyan, Hao Pan, Zhuangdi Zhu, Chuang-Wen You, Yi-Chao, and Lili Qiu. MagAttack: Guessing Application Launching and Operation via Smartphone. *The ACM Asia Conference on Computer and Communications Security (AsiaCCS 2019)*.
8. Zhuangdi Zhu, Yi-Chao Chen, Fan Zhang, and Chuang-Wen You. MagAttack: Remote App Sensing with Your Phone. *The 18th ACM International Joint Conference on Pervasive and Ubiquitous Computing (UBICOMP 2016)*.

### JOURNAL ARTICLES:

1. Zhuangdi Zhu, Alex X. Liu, Fan Zhang, and Fei Chen. FPGA Resource Pooling in Cloud Computing. **IEEE Transactions on Cloud Computing**, 2019.
2. Zhangjie, Fu, Jiashuang Xu, Zhuangdi Zhu, Alex X. Liu, and Xingming Sun. Writing in the Air with WiFi Signals for Virtual Reality Devices. **IEEE Transactions on Mobile Computing**, 2019.
3. Zhao, Yangming, Chen Tian, Zhuangdi Zhu, Jie Cheng, Chunming Qiao, and Alex X. Liu. Minimize the Make-span of Batched Requests for FPGA Pooling in Cloud Computing. **IEEE Transactions on Parallel and Distributed Systems**, 2018.
4. Xiaoyu J, Yushi C, Wenyan X, Yuehan C, Hao P, Zhuangdi Zhu, Chuang-Wen You, Yi-Chao, and Lili Qiu. No Seeing is Also Believing: Electromagnetic-emission-based Application Guessing Attacks via Smartphones. **IEEE Transactions on Mobile Computing**, 2021.

### OPEN ACCESS ARTICLES:

1. Zhuangdi Zhu, Kaixiang Lin, Anil K. Jain, and Jiayu Zhou. Transfer Learning in Deep Reinforcement Learning: A Survey. Under review of *IEEE Transactions on Pattern Analysis and Machine Intelligence*.
2. Boyang Liu, Zhuangdi Zhu, Pang-Ning Tan, and Jiayu Zhou. Defending Backdoor Data Poisoning Attacks by Using Noisy Label Defense Algorithm (under review).

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<sup>1</sup>\* Equal contribution.

## **PATENT:**

- Philip Quinn and Zhuangdi Zhu. Sensing Hand Gestures Using Optical Sensors. US Patent App (16/243,767), 2020.

## **TEACHING**

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### **CSE 847: Machine Learning**

*Spring 2020, Spring 2021*

- Volunteer teaching assistant for graduate-level machine learning class.
- Instructor for pre-exam Q & A lab sessions.
- Proposed lecture materials for CSE 847 advanced topics including *reinforcement learning* and *federated learning*.

### **CSE 231: Introduction to Programming**

*Spring 2017, Spring 2018, Fall 2018*

- Instructor for weekly lab sessions to teach Python programming techniques.
- Tutor for weekly in-person Q & A sessions for hundreds of students.
- Designed take-home projects about Python data structures, including *Class* and *String*.

### **CSE 260: Discrete Structures in Computer Science**

*Fall 2017*

- Teaching assistant for undergraduate-level classes; Served for grading, office-hours, and Q & A sessions.

## **TALKS & PRESENTATIONS**

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1. **ICML 2022** Spotlight Presentation: *Resilient and Communication Efficient Learning for Heterogeneous Federated Systems*.
2. **AAAI 2022** Short Presentation: *Self Adaptive Imitation Learning: Learning Sparse Rewarded Tasks from Sub-Optimal Demonstrations*.
3. **ICML 2021** Poster Presentation: *Data-free knowledge Distillation for Heterogeneous Federated Learning*.
4. **NeurIPS 2020** Poster Presentation: *Off-Policy Imitation Learning from Observations*.

## **SERVICES**

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### **Conference Reviewer:**

- Conference on Neural Information Processing Systems (**NeurIPS**) 2021 - 2022
- International Conference on Machine Learning (**ICML**) 2021 - 2022
- AAAI Conference on Artificial Intelligence (**AAAI**) 2020 - 2023
- International Conference on Learning Representations (**ICLR**) 2022 - 2023
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**) 2021 - 2022
- IEEE International Conference on Robotics and Automation (**ICRA**) 2022
- IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**) 2022

### **Program Committee Member:**

- AAAI Conference on Artificial Intelligence (**AAAI**) 2021 - 2023
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**) 2022

**Journal Reviewer:**

- NeuroComputing 2020 - 2022
- Information Sciences 2021 - 2022
- Neural Networks 2021 - 2022
- Patterns 2022
- IEEE Network Magazine 2021 - 2022
- IEEE Journal of Automatica Sinica 2022
- IEEE Robotics and Automation Letters 2021 -2022