ZHUANGDI ZHU

Senior Data and Applied Scientist
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EDUCATION

Michigan State University, USA
· Ph.D., Computer Science.   *Jan 2017 - Aug 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

Zhuangdi's research interest focuses on principled *machine learning.* Her doctoral research is dedicated to designing *knowledge transfer* algorithms for **reinforcement learning** and **federated machine learning**. She aims to developing machine leanring 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

Microsoft   *Sep 2022 - Present*
Senior Data & Applied Scientist   *Washington, United State*
· Developed end-to-end pipelines of knowledge extraction from Large Language Models; facilitate the creation of AI-powered search services;
· Built content recommendation services on Bing search for recreational segments, including movies, books, TV shows, and games.

Meta   *Jun 2021 - Sep 2021*
PhD Intern, Machine Learning Track   *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   *Jun 2019 - Aug 2019*
PhD Intern, Mchine Learning Track   *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   *May 2018 - Aug 2018*
PhD Intern, Human Computer Interaction   *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

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*[1], 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 Trasnferable 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, Wenyuan, 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, Kaixiang Lin, Anil K. Jain, and Jiayu Zhou. Transfer Learning in Deep Reinforcement Learning: A Survey. **IEEE Transactions on Pattern Analysis and Machine Intelligence**, 2023.

2. Zhuangdi Zhu, Alex X. Liu, Fan Zhang, and Fei Chen. FPGA Resource Pooling in Cloud Computing. **IEEE Transactions on Cloud Computing**, 2019.

3. 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.

4. 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.

5. Xiaoyu J, Yushi C, Wenyuan 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.

PATENT:

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

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[1]* Equal contribution.

TEACHING

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

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

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