Vernon, CT, 06066, USA
8607718756
tan.zhu@uconn.edu
Google Scholar: Tan Zhu
Home Page: Tan Zhu

Tan Zhu

QUALIFICATIONS

- Several publications at **NeurIPS**, **AAAI**, and the top-tier journal published by **Nature Publishing Group**.
- Strong knowledge of theory, practice, and research experience on **explainable deep neural networks-based recommendation system, reinforcement learning, and deep learning for MRI diagnostics**, with an emphasis on attention module, click-through rate prediction, stochastic contexture bandit problem.
- Proficient in Python and C++, with advanced expertise in machine learning and deep learning frameworks such as PyTorch, Caffe, Scikit-learn, LightGBM, and XGBoost for machine learning applications.

EDUCATION

2018–Present **Ph.D – Machine Learning**, *Department of Computer Science and Engineering*, Univeristy of Connecticut, Storrs, CT, GPA 4.0/4.0.

2014–2017 **M.A. – Computer Science and Technology**, Northeastern University – Shenyang, China.
Thesis: Research and Application of Algorithm on Knowledge Learning from Expert Game Records of Go

RESEARCH EXPERIENCE

2019–Present **Research Assistant: Interpretable Deep Neural Network for Recommender Systems**, *University of Connecticut, Storrs, CT*.

- Design and implement a module called **Polyhedron Attention Module** for deep neural networks to learn interaction effects adaptively. Propose the interpretation framework to identify critical interactions. Conduct experiments to show its state-of-the-art performance on massive datasets of the **Click-through Rate Prediction**, a critical task in the recommender system, and examine the learned interaction effects in predicting brain age with brain white volumes. This work has been accepted by **NeurIPS 2023 (Accept Ratio: 26.1%)**.
- Designed and implemented deep neural networks diagnosing alcohol/nicotine use disorder with MRI images, which leveraged interpretable knowledge of brain networks and alcohol/nicotine biotypes to enhance performance. This work is published in **Translational Psychiatry 2022 (by Nature Publishing Group, Q1 journal) and Biological Psychiatry: Cognitive Neuroscience and Neuroimaging 2023 (Q1 journal)**.

2018–2021 **Research Assistant: Optimization and Convergence Analysis in Deep Reinforcement Learning**, *University of Connecticut, Storrs, CT*.

- Design and implement a stage-wised optimization algorithm for *deep stochastic contextual bandits problem*. Conduct theoretical analysis and extensive experiments to demonstrate the effectiveness and efficiency of the proposed algorithm. This work is accepted by **AAAI 2021 (Accept Ratio: 21.1%)**.

2014 – 2017 **Research Assistant: Key Algorithm Research in High Complex Game Problem Based on Deep Learning**, *Northeastern University, Shenyang, China*.

- Design and implement Belief-state Monte-Carlo Tree Search, a searching framework used in imperfect information games, which is published in **IEEE Symposium on Computational Intelligence and Games 2015** and **IEEE Transactions on Games 2017**.
- Conducted experiments and theoretical Analysis of Only-One-Victor, an algorithm proposed for pattern learning in the Go game. This work is published in **IEEE Transactions on Games 2015**.

SELECTED PUBLICATIONS (6/18)

2023 [1] **Tan Zhu**, Fei Dou, Xinyu Wang, Jin Lu, Jinbo Bi. "Polyhedron Attention Module: Learning Adaptive-order Interactions." NeurIPS 2023, **($\mathbf{A}^+$ conference, accept ratio: 26.1%)**.

2023 [2] **Tan Zhu**, Wuyi Wang, Yu Chen, Henry R Kranzler, Chiang-Shan R Li, Jinbo Bi, "Machine Learning of Functional Connectivity to Biotype Alcohol and Nicotine Use Disorders." Biological Psychiatry: Cognitive Neuroscience and Neuroimaging, 2023, **(Q1 journal, impact factor: 5.9)**.

2023 [3] Fei Dou, Jin Lu, **Tan Zhu**, Jinbo Bi, "On-Device Indoor Positioning: A Federated Reinforcement Learning Approach With Heterogeneous Devices." IEEE Internet of Things Journal, 2023, **(Q1 journal, impact factor: 9.9)**.

2022 [4] **Zhu, Tan**, Chloe Becquey, Yu Chen, Carl W. Lejuez, Chiang-Shan R. Li, and Jinbo Bi. "Identifying alcohol misuse biotypes from neural connectivity markers and concurrent genetic associations." Translational Psychiatry 12, no. 1 (2022): 253, **(Q1 journal, by Nature Publication Group, impact factor: 7.9)**.

2021 [5] **Zhu, Tan**, Guannan Liang, Chunjiang Zhu, Haining Li, and Jinbo Bi. "An Efficient Algorithm for Deep Stochastic Contextual Bandits." In Proceedings of the AAAI Conference on Artificial Intelligence, vol. 35, no. 12, pp. 11193-11201. 2021, **($\mathbf{A}^+$ conference, accept ratio: 21.4%)**.

2019 [6] Zhu, Chun Jiang, **Tan Zhu**, Kam-Yiu Lam, Song Han, and Jinbo Bi. "Communication-optimal distributed dynamic graph clustering." In Proceedings of the AAAI Conference on Artificial Intelligence, vol. 33, no. 01, pp. 5957-5964. 2019 **, ($\mathbf{A}^+$ conference, accept ratio: 16.2%)**.