Zhengxu Yu

Email: yuzxfred@gmail.com

Phone: +8618685885459

DBLP: https://dblp.org/pid/246/3155

Website: https://zhengxuyu.github.io

EDUCATIONAL EXPERIENCE

- **Ph.D, Zhejiang University, Department of Computer Science**

  Sep. 2017 - Mar. 2021 under the supervision of Prof. Deng Cai

  - **Research interests**: large-scale reinforcement learning, deep multimodal models.

- **MS.c, University of Surrey, Department of Computer Science**

  Sep. 2015 - Dec. 2016 under the supervision of Prof. H. Lilian Tang

  - **Research interests**: computer vision, machine learning

  - Thesis: CNN-based Mycobacterium Cells Segmentation for Time-lapse Images

- **Bachelor, Jilin University, Department of Communication Engineering**

  Sep. 2011 - Jun. 2015

Experience

Algorithm Expert, Alibaba Cloud, Alibaba Group (April 2021 - Present)

- Developed a scalable reinforcement learning framework and proposed several post-training methods for LLMs, integrating curriculum learning, meta-action strategies, and preference-guided optimisation, achieving 20%+ reasoning improvement and 30%+ inference efficiency gains on general reasoning benchmarks like AIME, LiveCodeBench.

- Developed a LLM agent system to autonomously solve complex real-world optimisation tasks like schedule optimisation in Olympic Games.

- Led the development of a city-level digital twin system integrating reinforcement learning-based layout optimisation and multimodal deep

learning, achieving a 20%+ improvement in urban CCTV deployment efficiency. This system has been deployed in 5+ cities with 30,000+ CCTV devices and recognised as "2024 Typical Cases of AI System" by the Ministry of Industry and Information Technology (MIIT) and the State General Administration of Sports (SGAS).

- Supervise research interns and promote high-impact publications focused on reinforcement learning and multimodal models.

Research Intern, Dharma Institute, Alibaba Group (January 2018 - March 2021)

- **Conducted research on large-scale multi-agent reinforcement learning and published two first-author papers in CCF-A journals/conferences.** Proposed a message-passing graph neural network for multi-agent coordination, achieving state-of-the-art performance on traffic signal control benchmarks.

- **Conducted research on computer vision models and published five papers in CCF-A journals/conferences, including two as first author**. Proposed a novel Conv-LSTM architecture that enhances the generative capacity of CNN backbones and achieved state-of-the-art performance on visual analysis tasks such as person re-identification.

- **Granted 7 national invention patents in reinforcement learning and computer vision algorithms.**

Awards and Honours

1. Outstanding Intern Award, Alibaba Group DAMO Institute (2018, 2019, 2021)
2. Outstanding Graduate Student Award, Zhejiang University (2019, 2020)

Academic Services

PC Member of top AI conferences, including IEEE TIP, IEEE TMM, IEEE TCDS, NeurIPS, IJCAI, AAAI, ECCV, and ICLR

Published Papers

1. Xiang, C., Jin, Z., **Yu, Z.**, Hua, X. S., Hu, Y., Qian, W., ... & He, X. (2023). Optimizing traffic efficiency via a reinforcement learning approach based on time allocation. *International Journal of Machine Learning and Cybernetics*, *14*(10), 3381-3391.

2. Peng, L., Liu, F., **Yu, Z.**, Yan, S., Deng, D., Yang, Z., ... & Cai, D. (2022, October). Lidar point cloud guided monocular 3d object detection. In *European conference on computer vision* (pp. 123-139). Cham: Springer Nature Switzerland.

3. **Yu, Z.**, Jin, Z., Wei, L., Huang, J., Cai, D., He, X., Hua, X.S. "Progressive Transfer Learning." *IEEE Transactions on Image Processing (TIP)*, vol. 31, pp. 1340-1348, 2022, doi: 10.1109/TIP.2022.3141258.

4. Wang, W., Yu, Z., Fu, C., Cai, D., & He, X. (2021). COP: customized correlation-based Filter level pruning method for deep CNN compression. *Neurocomputing*, *464*, 533-545.

5. Guo, X.*, **Yu, Z.*** (*Co-first author), Wang, P., Jin, Z., Huang, J., Cai, D., He, X., Hua, X.S. "Urban Traffic Light Control via Active Multi-agent Communication and Supply-Demand Modeling." *IEEE Transactions on Knowledge and Data Engineering* (2021), doi: 10.1109/TKDE.2021.3130258.

6. **Yu, Z.** *, Liang, S.* (*Co-first author), Wei, L., Jin, Z., Huang, J., Cai, D., He, X., Hua, X.S. "MaCAR: Urban Traffic Light Control via Active Multi-agent Communication and Action Rectification." *IJCAI* '2020 (Acceptance Rate: 12.3% (592/4717)).

7. **Yu, Z.**, Jin, Z., Wei, L., Guo, J., Huang, J., Cai, D., He, X., Hua, X.S. "Progressive Transfer Learning for Person Re-identification." *IJCAI* '2019 (Acceptance Rate: 17.9% (850/4752)).

8. **Yu, Z.**, *Zhao, Y.* (*Co-first author), Hong, B., Jin, Z., Huang, J., Cai, D., Hua, X.S. "Apparel-invariant Feature Learning for Person Re-identification. " *IEEE Transactions on Multimedia*, doi: 10.1109/TMM.2021.3119133.

9. Xie, L., Xiang, C., **Yu, Z.**, Xu, G., Yang, Z., Cai, D., He, X. "PI-RCNN: An efficient multi-sensor 3D object detector with point-based attentive cont-conv fusion module." *AAAI* '2020 (Acceptance Rate: 16.2% (1150/7095)).

10. Wei, L., Wei, Z., Jin, Z., **Yu, Z.**, Huang, J., Cai, D., He, X., Hua, X.S. "SIF: Self-Inspirited Feature Learning for Person Re-Identification." *IEEE Transactions on Image Processing (TIP)* 29: 4942-4951 (2020).