

# Zhengxu Yu

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## EDUCATIONAL EXPERIENCE

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- **Ph.D, Zhejiang University, Department of Computer Science**  
**Sep. 2017 - Mar. 2021 under the supervision of Prof. Deng Cai & Prof. Xiaofei He**
  - **Research interests:** large-scale reinforcement learning, deep representation learning.
- **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

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**Senior Research Engineer, Inephany Ltd., London, UK (Aug. 2025 - Now)**

- Developing an in-context learning reinforcement learning (RL) system to automatically train conventional models such as LLMs and ViTs.

**Algorithm Expert, Apsara Lab. (former City Brain Lab., DAMO Institute), Alibaba Cloud, Alibaba Group (April 2021 - July 2025)**

- Conducting research on post-training methods for reasoning LLMs, primarily focusing on reinforcement learning-based approaches. Recently proposed several methods to enhance LLM reasoning performance and efficiency, submitted to NeurIPS 2025 and AACL 2025.
- 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 dynamic LLM agent (dynamic reasoning and tool utilisation ability) to autonomously solve challenging real-world agentic tasks (e.g., deep research) and operational research 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.

***Research Intern, City Brain Lab., DAMO 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

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

## Academic Services

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

## Published Papers

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1. Zhang, Y.\*, **Yu, Z.\*** (\*Co-first author), Pan, W., Jin, Z., Fu, Q., Lin, B., Cai, D., Ye J. TokenSqueeze: Performance-Preserving Compression for Reasoning LLMs. **NeurIPS 2025** (main track).
2. 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.
3. 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.
4. **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.
5. 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.

6. 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.
7. **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)).
8. **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)).
9. **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.
10. 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)).
11. Wei, L., Wei, Z., Jin, Z., **Yu, Z.**, Huang, J., Cai, D., He, X., Hua, X.S. "SIF: Self-Inspired Feature Learning for Person Re-Identification." ***IEEE Transactions on Image Processing (TIP)*** 29: 4942-4951 (2020).