HAOZHE DU

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EDUCATION

Zhejiang University, Hangzhou, Zhejiang, P.R.China *September, 2022 – March, 2025*

Master in Control Science and Engineering; **Advisor:** Prof. Rong Xiong and Prof. Yue Wang

Zhejiang University, Hangzhou, Zhejiang, P.R.China *September, 2018 – June, 2022*

Bachelor of Engineering in **Automation** (Robotics Track)

Dual Bachelor Degree in **Mechatronic Engineering**

College of Control Science and Engineering / Chu Kochen Honors College

- **GPA: 3.97/4, 91.1/100, Ranking: 1/28**

SCHOLARSHIPS & AWARDS

- **2020, 2021 Championship of RoboCup Small Size League, China Open** (Most Influential Robot Competition in China)
- **2022 Championship of RoboCup Small Size League, Zhejiang Provincial Competition**
- **2022 Outstanding Graduates of Zhejiang University**
- **2020, 2021 Zhejiang Provincial Government Scholarship** (Top 5%)
- **2019 Scholarship for Pilotage, Chu Kochen Honors College** (Top 5%)

PUBLICATIONS & MANUSCRIPTS

1 **Haozhe Du**, Kechun Xu, Rong Xiong, Yue Wang. PolyFold: A Generalizable Framework for Language-Conditioned Bimanual Cloth Folding. *submitted to IEEE Transactions on Automation Science and Engineering (TASE), under review.* [Project Page],[Paper Link]

2 **Haozhe Du**, Zhike Chen, Yufeng Wang, Zheyuan Huang, Yunkai Wang and Rong Xiong. Multi-Agent Trajectory Prediction Based on Graph Neural Network. *2021 IEEE International Conference on Real-time Computing and Robotics (RCAR).* [IEEE Paper Link]

3 Zexi Chen, **Haozhe Du**, Xuecheng Xu, Rong Xiong, Yiyi Liao, Yue Wang. Learning Interpretable BEV Based VIO without Deep Neural Networks. *2022 Conference on Robot Learning (CoRL).* [Link]

4 Zexi Chen, Yiyi Liao, **Haozhe Du**, Haodong Zhang, Xuecheng Xu, Haojian Lu, Rong Xiong, Yue Wang. DPCN++: Differentiable Phase Correlation Network for Versatile Pose Registration. *2023 IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI).* [IEEE Paper Link]

5 Zhike Chen, **Haozhe Du**, Haodong Zhang, Rong Xiong. Semantic Mask Transformer for 3D Human Pose Generation with Detailed Text Description. *submitted to AAAI 2025, under review.*

6 Zhike Chen, Zhiye He, **Haozhe Du**, Chenrui Han, Yunkai Wang, Zexi Chen, Rong Xiong. Multi-Stage Decision-Making Skill Learning for Soccer Robot. *2021 IEEE International Conference on Real-time Computing and Robotics (RCAR).* [IEEE Paper Link]

RESEARCH INTEREST

Fields Embodied Artificial Intelligence, Deformable Object Manipulation, 3D Vision

Methods Deep Learning, Foundation Models, Reinforcement Learning, Optimization

RESEARCH EXPERIENCE

Zhejiang University, Hangzhou, P.R.China
ZJU Robotics Lab, College of Control Science and Engineering *November, 2021 – Now*
Research Assistant, Advisor: Prof. Rong Xiong and Prof. Yue Wang

Project: Language-Conditioned Deformable Object Manipulation (DOM)

- Proposed PolyFold, an LLM-powered bimanual cloth folding framework that effectively tackles grounding and planning hierarchy challenges in applying Large Language Models to DOM.
- Achieved state-of-the-art zero-shot generalization to 70 unseen tasks and 4 types of unseen objects in both simulation and real-world experiments with ABB robots, operating with inherent multi-step reasoning ability and in an expert-demonstration-free manner.

Project: Differentiable Phase Correlation Network for Measurements Pose Registration

- Proposed DPCN++, leveraging Fourier transform and differentiable phase correlation for initialization-free and correspondence-free multi-modal measurements registration in a decoupled way.
- Proposed an interpretable and differentiable Bird Eye's View (BEV) visual-inertial odometry, which filtered IMU data for BEV projection and applied our DPCN estimator for BEV frame registration.

Project: Semantic Mask Transformer for Text-Conditioned 3D Human Pose Generation

- Proposed a novel algorithm to mitigate action combination bias in existing human pose generation datasets, enabling creation of diverse, high-quality human poses while preserving semantic alignment with textual descriptions.
- Utilized VQ-VAE for human body part tokenization and a generative mask transformer for pose generation, incorporating semantic biases from LLM-derived priors into training objectives, achieving state-of-the-art performance in high-quality text-conditioned pose generation.

ZJUNlict Robot Soccer Team, College of Control Science and Engineering *July, 2020 – July, 2022*
Core Team Member, Advisors: Prof. Rong Xiong & Zheyuan Huang

Project: Motion Prediction and Decision Making for Soccer Robot Swarm

- Proposed a graph neural network based method for robot swarm motion prediction which modeled different robots and environment as heterogeneous graph components, emphasizing confrontation and interaction of robot agents.
- Propose a centralized hierarchical decision-making module that utilizes finite state machine and scoring-based heuristic search to provide precise task instructions for robot swarm.

PROGRAMMING SKILLS

Python, Pytorch, C/C++, ROS, Java, MATLAB, Git, Markdown, LaTeX

LANGUAGE SKILLS

TOEFL iBT 104/120 (Reading 27, Listening 28, Speaking 21, Writing 28)