

# HAOZHE DU

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## EDUCATION

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**National University of Singapore**, Singapore *August, 2025 – Now*

**PhD** in Integrative Science and Engineering Programme (ISEP);

**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

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- **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

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- 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. *preprint 2025.*
- 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

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**Fields** Embodied Artificial Intelligence, Deformable Object Manipulation, 3D Vision  
**Methods** Deep Learning, Foundation Models, Reinforcement Learning, Optimization

## RESEARCH EXPERIENCE

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**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.

*ZJUNict 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

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

## LANGUAGE SKILLS

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