

Suning Huang

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EDUCATION BACKGROUND

Tsinghua University , Beijing, China	Expected 07/2024
<i>B.E., Automation</i>	
• Overall GPA: 3.94/4.00 (Rank 2/146)	
• Programming languages: C/C++, Python, MATLAB, LaTeX, Qt5	
• Selected Courses:	
Calculus (A)	Artificial Intelligence (A)
Linear Algebra (A)	Numerical Analysis (A)
Probability and Statistics (A),	Data Structure and Algorithm (A)
	Signals and System Analysis (A+)
	Theory of Automatic Control (A)
	Advanced Topics in Intelligent Robot (A)
• Awards and Honors:	
National Scholarship (0.2%)	10/2021
First Prize in Multi-modality Fusion & Classification Competition	06/2022
Scholarship for Outstanding Academic Performance (Top3)	10/2022, 2023

PUBLICATIONS

- **Suning Huang**, Boyuan Chen, Huazhe Xu, Vincent Sitzmann. **Morphological Maze: Control Reconfigurable Soft Robots with Fine-grained Morphology Change**. Accepted to *ICLR 2024*, [\[Link\]](#)
- **Suning Huang**, Can Chang, Tao Du, Huazhe Xu. **DrLara: Design Soft Robot with Latent Space Gradients**. Submitted to *ICRA 2024*, [\[Link\]](#)

RESEARCH EXPERIENCE

<i>Research student, advised by Prof. Huazhe Xu</i>	<i>Tsinghua University</i>
Soft Robot Co-design (Under Review at ICRA2024)	09/2022 – 06/2023
• Employed a variational auto-encoder (VAE) to represent robot morphology in a structured, differentiable latent space, enabling gradient optimization for optimal robot design.	
• Introduced a unique Dual-VAE structure to integrate task-related configurations with the robot design latent space, facilitating the generation of robot designs tailored for a specific category of tasks.	
• Improved efficiency and accuracy in optimizing robot morphology compared to evolution-based methods.	
<i>Research student, advised by Prof. Vincent Sitzmann</i>	<i>MIT EECS</i>
High-dimensional Control for Reconfigurable Robot (Under Review at ICLR2024)	07/2023 – 09/2023
• Firstly proposed a novel parametrization, drawing from material science knowledge, to translate the control of highly reconfigurable robots into a standard reinforcement learning (RL) framework.	
• Addressed high-dimensional RL challenges by employing a fully-convolutional control policy bolstered with a coarse-to-fine curriculum, enabling control of reconfigurable robots for detailed morphological alterations.	
• Developed a comprehensive MPM-based benchmark to validate the proposed algorithm.	
<i>Research student, advised by Prof. Benben Jiang</i>	<i>Tsinghua University</i>
Battery Fast-Charging Algorithm	01/2022 – 06/2022
• Employed Bayesian Optimization with Lipschitz continuity constraints to safely and systematically explore the parameter space and optimize charging functions.	
<i>Research student, advised by Prof. Xiang Li</i>	<i>Tsinghua University</i>
Deformable Object (DO) Manipulation with Dual-arm Robot (Plan to submit to T-RO)	09/2023 – Present
• Developed a dual-branch point-cloud-based algorithm with PointNet++ for enhanced feature extraction and analysis.	
• Focused one branch on end-to-end 3-D state regression and initial pose estimation, and the other on local calibration for precise occluded point state detection.	
• Combined the outputs of both branches to achieve a robust, accurate real-time perception algorithm, suitable for practical deployment in dynamic environments.	

MISCELLANEOUS

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| • Tsinghua Course Guidance Volunteer | 03/2021 – 06/2023 |
| • Teaching Assistant in Digital Electronics Course | 09/2021 – 01/2022 |
| • Class Leading Cadre | 09/2022 – 06/2023 |