Hehui Zheng

Doctoral Student, ETH AI Center, ETH Zürich, Switzerland

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Profile

Doctoral researcher specializing in **vision-based reconstruction**, **world models**, and **model-based learning and control** of hard-to-simulate robots, such as soft robots.

Education

ETH AI Center, ETH Zürich — Doctoral Student 2021–03/2027
- Supervisors: Prof. Robert Katzschmann, Prof. Stelian Coros
- Research: Vision-based reconstruction of soft robots and objects, dynamics learning, model-based control, RL for dexterous hands

University of Cambridge — M.Eng & BA, Information and Computer Engineering 2017–2021
- First Class Honours (Top 2%)
- Master's thesis: Sequential Reinforcement Learning for Robot Swarms (supervised by Prof. Amanda Prorok)

Research Experience

Microsoft Research Cambridge, United Kingdom 05/2026–07/2026
- Action-conditioned world models for cable manipulation. ***Research Intern***

Prorok Lab, **University of Cambridge**, United Kingdom 06/2020–09/2020
- Multi-agent reinforcement learning for quadcopters. ***Summer Research Assistant***

Prorok Lab, **University of Cambridge**, United Kingdom 06/2019–09/2019
- Adversarial learning for privacy-preserving flocking. ***Undergraduate Researcher***

Publications

Journal Articles

Learning Soft Robotic Dynamics with Active Exploration 2026
Hehui Zheng, Bhavya Sukhija, Chenhao Li, Klemens Iten, Andreas Krause, *et al.*
Nature Communications (accepted)
https://arxiv.org/abs/2510.27428

PokeFlex: A Real-World Dataset of Volumetric Deformable Objects for Robotics 2025
Jan Obrist*, Miguel Zamora*, **Hehui Zheng***, *et al.* (**co-first authors*)
IEEE Robotics and Automation Letters (RA-L)
https://ieeexplore.ieee.org/abstract/document/11129701

Vision-Based Online Key Point Estimation of Deformable Robots 2024
Hehui Zheng, Sebastian Pinzello, *et al.*
Advanced Intelligent Systems
https://doi.org/10.1002/aisy.202400105

An Adversarial Approach to Private Flocking in Mobile Robot Teams 2020
Hehui Zheng, Jacopo Panerati, Giovanni Beltrame, Amanda Prorok
IEEE Robotics and Automation Letters (RA-L)/ICRA
https://ieeexplore.ieee.org/abstract/document/8962220

Conference Proceedings

Fast Point Cloud to Mesh Reconstruction for Deformable Object Tracking 2024
Elham Amin Mansour, **Hehui Zheng**, Robert K. Katzschmann
ROBOVIS – Best Student Paper Honorable Mention
https://link.springer.com/chapter/10.1007/978-3-031-59057-3_25

Learning to Fly—A Gym Environment with Pybullet Physics for Reinforcement Learning of Multi-Agent Quadcopter Control 2021
Jacopo Panerati, **Hehui Zheng**, *et al.*
International Conference on Intelligent Robots and Systems (IROS)
https://ieeexplore.ieee.org/abstract/document/9635857

DSNAS: Direct Neural Architecture Search without Parameter Retraining 2020
Shoukang Hu, Sirui Xie, **Hehui Zheng**, *et al.*
Conference on Computer Vision and Pattern Recognition (CVPR)
https://doi.org/10.48550/arXiv.2002.09128

SNAS: Stochastic Neural Architecture Search 2019
Sirui Xie, **Hehui Zheng**, Chunxiao Liu, Liang Lin
International Conference on Learning Representations (ICLR)
https://doi.org/10.48550/arXiv.1812.09926

Under Review

Dynamic Shape Control of Soft Trunk Robots 2026
Hehui Zheng*, Marc Stampanoni*, Roshan S. Kaundinya*, *et al.*
Under review
https://arxiv.org/abs/2611.06625

Accelerated Reinforcement Learning for Soft Robotics: Hours Instead of Years 2026
Roshan S. Kaundinya*, **Hehui Zheng***, Robert K. Katzschmann, George Haller
Under review
https://arxiv.org/abs/2611.11718

Fingers as Legs: Learning Self-Supported Locomotion and Manipulation with an Anthropomorphic Hand 2026
Amirhossein Kazemipour, **Hehui Zheng**, Robert K. Katzschmann
Under review
https://arxiv.org/abs/2609.17172

SERNF: Sample-Efficient Real-World Dexterous Policy Fine-Tuning via Action-Chunked Critics and Normalizing Flows 2026
Chenyu Yang, Denis Tarasov, Davide Liconti, Romain Guntz, **Hehui Zheng**, *et al.*
Under review
https://arxiv.org/abs/2602.09580

Technical Skills

Languages: Python, C++, MATLAB
Machine Learning: PyTorch, JAX, TensorFlow
Simulation: MuJoCo, Isaac Sim, SOFA, PyBullet, Unreal Engine
Hardware: pneumatic/tendon soft arms, dexterous hands, musculoskeletal systems, drones