Yuhang Zheng

School of Mechanical Engineering and Automation, Beihang University, Beijing

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Education

National University of Singapore *Singapore*

PhD in School of Computing | Advisor: **Prof. Lin Shao** *Aug 2025 - Current*

- Research Interest: Vision-tactile Fusion Manipulation, Contact-rich Manipulation, 3D-VLA

Beihang University *Beijing, China*

Academic Master in Mechanical Engineering | Advisor: **Prof. Meiqing Wang** *Sept 2022 - Jun 2025*

- Weighted Average: 91.0 / 100
- Thesis Title: An Automatic Parsing Method of Multi-modal Welding Process Files Based on Deep Learning.

Beihang University *Beijing, China*

Bachelor in Mechanical Engineering (National First-class Discipline Program) *Sept 2018 - Jun 2022*

- Weighted Average: 88.3 / 100 **(top 10%)**
- Thesis Title: An Automatic Extraction Method of Welding Process Elements Based on Chinese Named Entity Recognition.

Awards

Awards during Undergraduate and Postgraduate Studies

- **National Scholarship (top 2%)**, Ministry of Education of the PRC, 2024.
- Outstanding Postgraduate Student Award, Beihang University, 2024.
- "Alumnus of Beihang University" Scholarship, 2023.
- Outstanding Graduate Award, Beihang University, 2022.
- First Prize of the Chinese Mathematics Competitions for Undergraduates, Chinese Mathematical Society, 2021.

Research Interest

My **long-term research goal** is to build agents that efficiently understand the physical world. These agents will then apply their knowledge to interact with the physical world, fostering adaptability and enabling continuous skill acquisition.

Computer Vision 3D scene understanding; Monocular geometry estimation; 3D Reconstruction.

Robotics Vision-tactile Fusion, Vision-language-action Model, 3D Representation for Robotics.

Research Experience

TARS (它石智航) *Shanghai, China*

Research Intern @ **TARS AI** | Advisor: **Prof. Yilun Chen** and **Prof. Wenchao Ding** *Mar. 2025 - Current*

- **Topic:** Vision-tactile Fusion Manipulation, Contact-rich Manipulation, 3D-VLA.

AIR, Tsinghua University *Beijing, China*

Research Intern @ **DISCOVER Lab** | Advisor: **Prof. Yilun Chen** and **Prof. Xiaoxiao Long** *Aug. 2021 - Current*

- **Topic:** 3D scene understanding; Robotic manipulation; Autonomous driving; Mechanical structure design.

LightIllusions (光影焕像) *Beijing, China*

Research Intern @ **LightIllusions** | Advisor: **Prof. Xiaoxiao Long** and **Prof. Ping Tan** *Apr. 2024 - Dec. 2024*

- **Topic:** Monocular geometry estimation; Robotic manipulation.

EncoSmart (享刻智能) *Beijing, China*

Research Intern @ **EncoSmart** | Advisor: **Prof. Xiaoxiao Long** and **Dr. Chao Yang** *Dec. 2023 - Dec. 2024*

- **Topic:** Language-guided grasping; 3D Reconstruction.

SMEA, Beihang University *Beijing, China*

Research Intern @ **Robotics Institute** | Advisor: **Prof. Huichao Deng** and **Prof. Wei Wang** *Sept. 2020 - Dec. 2021*

- **Topic:** Micro flapping-wing aircraft; Dental implant robot; Mechanical structure design.

Publications

(* denotes equal contribution; † denotes corresponding author.)

Journal Articles

GaussianGrasper: 3D Language Gaussian Splatting for Open-vocabulary Robotic Grasping

Yuhang Zheng, Xiangyu Chen, Yupeng Zheng, Songen Gu, Runyi Yang, Bu Jin, Pengfei Li, Chengliang Zhong, Zengmao Wang, Lina Liu, Chao Yang, Dawei Wang, Zhen Chen, Xiaoxiao Long†, Meiqing Wang†

RA-L, 2024

Adaptive Surface Normal Constraint for Geometric Estimation from Monocular Images
Xiaoxiao Long*, **Yuhang Zheng***, Yupeng Zheng, Beiwen Tian, Cheng Lin, Lingjie Liu, Hao Zhao†, Guyue Zhou, Wenping Wang†
IEEE TPAMI, 2024

ECT: Fine-grained Edge Detection with Learned Cause Tokens
Shaocong Xu, Xiaoxue Chen, **Yuhang Zheng**, Guyue Zhou, Yurong Chen, Hongbin Zha, Hao Zhao†
Image and Vision Computing, 2024

Lift System Optimization for Hover-capable Flapping Wing Micro Air Vehicle
Shengjie Xiao, Yongqi Shi, Zemin Wang, Zhe Ni, **Yuhang Zheng**, Huichao Deng†, Xilun Ding
Frontiers of Mechanical Engineering, 2024

Conference Proceedings

World4Drive: End-to-End Autonomous Driving via Intention-aware Physical Latent World Model
Yupeng Zheng, Pengxuan Yang, Zebin Xing, Qichao Zhang, **Zheng, Yuhang**, Yinfeng Gao, Pengfei Li, Teng Zhang, Zhongpu Xia, Peng Jia, Dongbin Zhao†
ICCV, 2025

TOD3Cap: Towards 3D Dense Captioning in Outdoor Scenes
Bu Jin, Yupeng Zheng†, Pengfei Li, Weize Li, **Yuhang Zheng**, Sujie Hu, Xinyu Liu, Jinwei Zhu, Zhijie Yan, Haiyang Sun, Kun Zhan, Peng Jia, Xiaoxiao Long, Yilun Chen, Hao Zhao
ECCV, 2024

Monoocc: Digging into Monocular Semantic Occupancy Prediction
Yupeng Zheng, Xiang Li, Pengfei Li, **Yuhang Zheng**, Bu Jin, Chengliang Zhong, Xiaoxiao Long, Hao Zhao, Qichao Zhang†
ICRA, 2024

Enhancing Daily Life through an Interactive Desktop Robotics System
Yuhang Zheng, Qiyao Wang, Chengliang Zhong†, He Liang, Zhengxiao Han, Yupeng Zheng
CICAI, *Best Demo Award*, 2023

3D Implicit Transporter for Temporally Consistent Keypoint Discovery
Chengliang Zhong, **Yuhang Zheng**, Yupeng Zheng, Hao Zhao†, Li Yi, Xiaodong Mu, Ling Wang, Pengfei Li, Guyue Zhou, Chao Yang, Xinliang Zhang, Jian Zhao
ICCV, *Oral*, 2023

DPF: Learning Dense Prediction Fields with Weak Supervision
Xiaoxue Chen, **Yuhang Zheng**, Yupeng Zheng, Qiang Zhou, Hao Zhao†, Guyue Zhou, Ya-Qin Zhang
CVPR, 2023

Int2: Interactive Trajectory Prediction at Intersections
Zhijie Yan, Pengfei Li, Zheng Fu, Shaocong Xu, Yongliang Shi, Xiaoxue Chen, **Yuhang Zheng**, Yang Li, Tianyu Liu, Chuxuan Li, Nairui Luo, Xu Gao, Yilun Chen, Zuoxu Wang, Yifeng Shi, Pengfei Huang, Zhengxiao Han, Jirui Yuan, Jiangtao Gong, Guyue Zhou, Hao† Zhao
ICCV, 2023

Steps: Joint self-supervised Nighttime Image Enhancement and Depth Estimation
Yupeng Zheng, Chengliang Zhong, Pengfei Li, Huan-ang Gao, **Yuhang Zheng**, Bu Jin, Ling Wang, Hao Zhao, Guyue Zhou, Qichao Zhang†, Dongbin Zhao
ICRA, 2023

Adapt: Action-aware Driving Caption Transformer
Bu Jin, Xinyu Liu, Yupeng Zheng, Pengfei Li, Hao Zhao†, Tong Zhang, **Yuhang Zheng**, Guyue Zhou, Jingjing Liu
ICRA, 2023

Challenge

Tactile-Vision-Fusion Manipulation

TARS | Advised by **Dr. Ruihai Wu** and **Prof. Xiaoxiao Long** *Dec 2024 - Apr 2025*

Champion in Maniskill-Vitac Track 2 (Tactile-Vision-Fusion Manipulation)