

Rui Yin

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Education

The University of Hong Kong <ul style="list-style-type: none">• Master in Science, Computer Science Withdrawn	Sept 2022 – Jan 2023
Sun Yat-sen University <ul style="list-style-type: none">• Bachelor of Engineering, Software Engineering GPA: 3.6/4.0	Sept 2018 – June 2022

Research Interests

3D Vision, Robotics, Object/Camera Pose Estimation, Representation Learning, Model Compression

Publications

BiDense: Binarization for Dense Prediction

Rui Yin, Haotong Qin, Yulun Zhang, Wenbo Li, Yong Guo, Jianjun Zhu, Cheng Wang, Biao Jia
arXiv, 2024. [Project Page](#)

SRPose: Two-view Relative Pose Estimation With Sparse Keypoints

Rui Yin, Yulun Zhang, Zherong Pan, Jianjun Zhu, Cheng Wang, Biao Jia
ECCV, 2024. [Project Page](#)

Identifying Spatial Domain by Adapting Transcriptomics With Histology Through Contrastive Learning

Yuansong Zeng*, Rui Yin*, Mai Luo, Jianing Chen, Zixiang Pan, Yutong Lu, Weijing Yu, Yuedong Yang
Briefings in Bioinformatics, 2023

Spatial Transcriptomics Prediction From Histology Jointly Through Transformer and Graph Neural Networks

Yuansong Zeng, Zhuoyi Wei, Weijiang Yu, Rui Yin, Yuchen Yuan, Bingling Li, Zhonghui Tang, Yutong Lu, Yuedong Yang
Briefings in Bioinformatics, 2022

Research Experience

Hanglok-Tech Research Assistant 3D Vision Advisor: Dr. Biao Jia, Prof. Yulun Zhang <ul style="list-style-type: none">• Published <i>SRPose: Two-view relative pose estimation with sparse keypoints</i>.• Proposed a novel framework for camera and object two-view relative pose regression using sparse keypoints, achieving state-of-the-art performance in accuracy and speed. Model Quantization Advisor Dr. Haotong Qin, Prof. Yulun Zhang <ul style="list-style-type: none">• Published <i>BiDense: Binarization for Dense Prediction</i>.• Proposed a generalized binarization framework for dense prediction tasks, achieving performance comparable to full-precision models while significantly reducing computational resource requirements.	Shenzhen, China Aug 2023 – Nov 2024
Laboratory of Data Discovery for Health, The University of Hong Kong Research Assistant Advisor: Prof. Joshua Ho <ul style="list-style-type: none">• Developed temporal neural networks to denoise and process lung and heart sounds, assisting and deploying remote diagnosis applications.	Hong Kong SAR Oct 2022 – Jan 2023
AI4science Lab, Sun Yat-sen University Research Intern Advisor: Prof. Yuedong Yang Multimodal, Bioinformatics:	Guangzhou, China Apr 2020 – Sept 2022

- Published *Identifying spatial domain by adapting transcriptomics with histology through contrastive learning*.
- Classified and clustered spatial transcriptomics data using multimodal contrastive learning, achieving state-of-the-art accuracy.
- Published *Spatial transcriptomics prediction from histology jointly through transformer and graph neural networks*.
- Predicted spatial transcriptomics from histological images with GNN-transformer hybrid architectures.

Selected Projects

Visual 6DoF Pose Estimation of Surgical Robotic Arms Shenzhen, China
 Advisor: Dr. Biao Jia Aug 2023 - Nov 2023

- Performed 6DoF pose estimation using CAD models and differentiable rendering for dual surgical robotic arms.
- Achieved real-time object pose tracking using only RGB inputs.

NUS SOC 2021 Summer Workshop, National University of Singapore Singapore
 Advisor: Dr. Tan Zi Qing May 2021 - Aug 2021

- Developed IoT applications for COVID-19 epidemic prevention and access control.
- Deployed human face and mask detection models on a cloud server for edge devices.

National Training Program of Innovation and Entrepreneurship Guangzhou, China
 Advisor: Prof. Yuedong Yang Apr 2020 - Nov 2020

- Developed semi-supervised learning models for medical images to leverage unlabeled data, enhancing lesion classification and segmentation accuracy.

Skills

Programming Languages: Python, C/C++, Matlab

Tools and Frameworks: PyTorch, Git, \LaTeX