Rui Yin

yinrui2000@outlook.com | frickyinn.github.io

Education

The University of Hong Kong — Sept 2022 – Jan 2023
- Master in Science, Computer Science | Withdrawn

Sun Yat-sen University — Sept 2018 – June 2022
- Bachelor of Engineering, Software Engineering | GPA: 3.6/4.0

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 — Shenzhen, China

Research Assistant — Aug 2023 – Present

3D Vision | Advisor: Dr. Biao Jia, Prof. Yulun Zhang

- Publish *SRPose: Two-view relative pose estimation with sparse keypoints*.
- Calibrate keypoints' coordinates with camera intrinsics within networks to obtain precise positional information.
- Utilize prior knowledge of descriptor similarities to guide cross-attention module.

Model Quantization | Advisor Dr. Haotong Qin, Prof. Yulun Zhang

- Publish *BiDense: Binarization for Dense Prediction*.
- Propose a generalized binarization framework for dense prediction, including monocular depth estimation and semantic segmentation tasks.

Laboratory of Data Discovery for Health, The University of Hong Kong — Hong Kong SAR

Research Assistant | Adivsor: Prof. Joshua Ho — Oct 2022 – Jan 2023

- Construct temporal neural network to denoise and process lung and heart sounds, assisting and deploying remote diagnosis applications.

AI4science Lab, Sun Yat-sen University — Guangzhou, China

Research Intern | Advisor: Prof. Yuedong Yang   Apr 2020 – Sept 2022

Multimodal, Bioinformatics:

- Publish *Identifying spatial domain by adapting transcriptomics with histology through contrastive learning*.
- Employ multimodal contrastive learning to classify and cluster spatial transcriptomics data.
- Publish *Spatial transcriptomics prediction from histology jointly through transformer and graph neural networks*.
- Construct hybrid architecture of GNNs and transformers to predict spatial transcriptomics from histological images.

Selected Projects

Visual 6DoF Pose Estimation of Surgical Robotic Arms   Shenzhen, China

Advisor: Dr. Biao Jia   Aug 2023 - Nov 2023

- Perform 6DoF pose estimation through CAD model and differentiable rendering for dual surgical robotic arms.
- Achieve 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

- Develop intelligence of things (IoT) applications for COVID-19 epidemic prevention and entrance access control.
- Deploy human face and mask detection models on the cloud server and the embedded system.

National Training Program of Innovation and Entrepreneurship   Guanzhou, China

Advisor: Prof. Yuedong Yang   Apr 2020 - Nov 2020

- Construct semi-supervised learning model on medical images to utilize unlabeled data, improving lesion classification and segmentation accuracy.

Skills

Programming Languages: Python, C/C++, Matlab
Tools and Frameworks: PyTorch, Git, LaTeX