Chenghao (Shenghao) Li

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🎓 Education

Shanghai Jiao Tong University (SJTU)   2020.09 – 2023.12
Pattern Recognition and Intelligent Systems   3D Vision   PhD   Advisor: Prof. Qunfei Zhao
East China University of Science and Technology (ECUST)   2017.09 – 2020.06
Mechanical Engineering   Robot Vision   Master   Advisor: Prof. Shuang Liu
East China University of Science and Technology (ECUST)   2013.09 – 2017.06
Mechanical Engineering & English   Bachelor (Honours)   Advisor: Prof. Shuang Liu

🏛 Selected Publications

- **S. Li**, Z. Xia and Q. Zhao, "Representing Boundary-ambiguous Scene Online with Scale-encoded Cascaded Grids and Radiance Field Deblurring", in IEEE Transactions on Circuits and Systems for Video Technology, vol. 34, no. 4, pp. 2026-2040, 2024. Link
- **S. Li**, Q. Zhao and Z. Xia, "Sparse-to-Local-Dense Matching for Geometry-Guided Correspondence Estimation", in IEEE Transactions on Image Processing, vol. 32, pp. 3536-3551, 2023. Link
- **S. Li**, S. Liu, Q. Zhao and Q. Xia, "Quantized Self-Supervised Local Feature for Real-Time Robot Indirect VSLAM", in IEEE/ASME Transactions on Mechatronics, vol. 27, no. 3, pp. 1414-1424, 2022. Link
- Liu S, **Li S**, Pang L, et al. Autonomous Exploration and Map Construction of a Mobile Robot Based on the TGHM Algorithm[J]. Sensors, 2020, 20(2):490. Link
- **Li S**, Zhang G, Zhao Q. Self-supervised Feature Detection and Binary Description in Hamming Space for Mobile Platforms[C]//2021 IEEE International Conference on Real-time Computing and Robotics (RCAR). 2021: 45-50. Link

The full list of publication is available at Google Scholar Page and Homepage.

💼 Work Experience

MiniMax - Large Model Algorithm Engineer   2024.05 – Now

- Large-scale foundational model pre-training for text-to-image and text-to-video generation;
- Develop image classification and aesthetic evaluation models for image sample distribution adjustment;
- Research and develop multi-modal visual captioning models for image and video understanding;
- Manage and maintain the large-scale image dataset (over 10B) for training, labeling, and evaluation;

⚗ Selected Internships

MiniMax - 3DV&AIGC Research Intern   2021.11 – 2023.05

- Finetuned stable-diffusion and novel diffusion models with self-collected datasets;
- Reimplemented multiple SOTA works, e.g., Imagen, Control-Net, T2I-Adaptor, MipNeRF360, AD-NeRF, etc;
- Implemented multiple features for text-to-image generation, including style control, human pose control, diffusion inference acceleration, classifier-free guidance, etc;
- Deployed subjective, FID, and CLIP-score evaluation web services for text-to-image generation and control;
- Designed 3D animatable avatars based on NeRF, and the driving signals include facial keypoints, audio, SMPL, Openpose, meshes, etc. Demo available at homepage;
- Established data pipeline for 3D avatar with LightStage and participated in the collection of 500+ people;

QualComm - AI Intern   2019.07 – 2020.07

- Researched neural network quantization for edge computing and lightweight AI;
- Reimplemented inference acceleration SOTAs, e.g., Data-free Quantization, ShuffleNet, MobileNet, etc;
- Developed a comment analysis model for Customer Engineering, deployed in the comment query system;

Oceanbotech - Robotics&Vision Intern   2016.10 – 2019.06

- Established a mobile platform with Diji motor, Intel NUC, Realsense D435, Rplidar A2, and Jetson TX2;

- Programmed a ROS-based autonomous system for the mobile platform;
- Developed and deployed VSLAM, object tracking, and object detection algorithms on the mobile platform;
- Developed and deployed a pose control algorithm with real-time fuzzy optimization for an underwater ROV;
- Designed and taught AI and Robotics programming courses at Dalian University of Technology and Shanghai Xuhui High School;

☷ Selected Research Projects

Visual Scene Perception and 3D Reconstruction - Researcher - Link   2022.11 – 2023.06

- Proposed an online scene representation learning for indoor/outdoor scenes in a reparameterized domain;
- Proposed an radiance field deblurring scheme against motion blur by leveraging physical imaging process;

Learning-based Correspondence Estimation and Visual SLAM - Researcher - Link   2021.09 – 2022.06

- Proposed an E2E feature detection, description and matching pipeline with supervision noise regularized;
- Proposed a feature-based VSLAM with quantized self-supervised local feature with more stable tracking;

Vision-based Multi-truss Workpiece Grabbing - Algorithm Developer - Link   2021.11 – 2022.06

- Proposed a 3D pose estimation method for densely stacked complex workpieces with an RGB-D camera;
- Developped a vision-based workpiece grabbing algorithm with a line-scan camera and a multi-truss system;

3D Visual Drug Box Detector - Algorithm Developer - Link   2019.10 – 2020.06

- Established a 3D visual drug box detection pipeline, performed drug identification and 3D size estimation;
- Built a drug box datasets with customized hardwares, participated in data collection of 1,000+ samples;

ROS Omnidirectional Mobile Platform Development - Software Developer - Link   2018.07 – 2019.06

- Proposed a robust and accurate feature-based VSLAM for Visual Mapping and Localization;
- Developed ROS-based CV applications on Jetson platforms, e.g., object tracking, object detection, etc;

🏆 Awards

SJTU WeiChai Power Scholarship (top1% highest honour at SJTU)	2023.12
Shanghai College Student Creative Robot Challenge, Second Prize	2019.10
ECUST Ship Model Design Competition, Second Prize	2015.10

⚙ Skills

Programming: Python, C/C++, ROS, Tensorflow, Pytorch, OpenCV, Transformer;

Misc: English (IELTS 7.5), Linux, Shell, LaTeX, Markdown, Microsoft Office, Git, Fencing, Tennis, Basketball;