

Suizhi Huang

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🔗 <https://jeandiable.github.io/>

🔗 <https://scholar.google.com/citations?user=Bg9FHewAAAAJ>

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🎓 EDUCATION

Shanghai Jiao Tong University, Shanghai, China

2022.9 – 2025.3 (Expected)

Master Candidate in Electronic Information

Supervisor: Prof. Hongtao Lu @ BCMI Lab GPA: 3.83/4.0

Shanghai Jiao Tong University, Shanghai, China

2018.9 – 2022.6

Bachelor of Arts in French,

Bachelor of Science in Information Engineering

Score: 89.6/100

📅 RESEARCH EXPERIENCES

Parameter Diffusion for Multi-Task Learning

2024.2 – Now

Keywords: Multi-Task Learning, Parameter Diffusion

Parameter Diffusion for Multi-Task Learning is a technique that involves sharing and transferring parameters between tasks in a multi-task learning setting. By allowing parameters to diffuse or transfer across tasks, this approach aims to improve the learning efficiency and performance of models by leveraging shared knowledge and relationships between different tasks.

Federated Multi-Task Learning

2023.9 – Now

Keywords: Multi-Task Learning, Personalized Federated Learning, Hetero-Clients

We introduced a new concept called Hetero-Client Federated Multi-Task Learning, expanding the scope of FMTL to encompass a diverse range of clients, tasks, and data scenarios. We established a mathematical link between the optimization processes of Multi-Task Learning (MTL) and Federated Learning (FL). Additionally, we created experimental benchmarks for FMTL in different FL settings.

Multi-Task Learning for Biomedical Images

2023.4 – 2023.9

Keywords: Multi-Task Learning, Object Detection, Semantic Segmentation, Biomedical Images

Object detection and semantic segmentation are vital in biomedical image analysis. To address challenges in balancing accuracy and speed in multi-task learning, we introduce YOLO-Med, an efficient multi-task network with multi-scale feature extraction and task-specific decoders.

Global Optimization for Point Cloud Matching using Frequency Information

2021.9 – 2022.6

Keywords: SLAM, Phase Correlation, Point Cloud Registration, ICP, Frequency Information

The accuracy and robustness of the point cloud registration algorithm are crucial for SLAM navigation. We propose a phase correlation-based ICP algorithm that uses frequency domain information for global optimization, surpassing traditional ICP in accuracy and stability, even with large datasets and noise.

📖 PUBLICATIONS

1. Towards Hetero-Client Federated Multi-Task Learning

Yuxiang Lu*, Suizhi Huang*, Yuwen Yang, Shalayiding Sirejiding, Yue Ding, Hongtao Lu

IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2024, *co-first author*

2. **YOLO-MED : Multi-Task Interaction Network for Biomedical Images**
Suizhi Huang, Shalayiding Sirejiding, Yuxiang Lu, Yue Ding, Leheng Liu, Hui Zhou, Hongtao Lu
 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2024 oral
3. **Task Indicating Transformer for Task-conditional Dense Predictions**
 Yuxiang Lu, Shalayiding Sirejiding, Yue Ding, Bayram Bayramli, **Suizhi Huang**, Hongtao Lu
 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2024 oral
4. **UNIDEAL: Curriculum Knowledge Distillation Federated Learning**
 Yuwen Yang, Chang Liu, Xun Cai, **Suizhi Huang**, Hongtao Lu, Yue Ding
 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2024 oral
5. **BARTENDER: A Simple Baseline Model for Task-level Heterogeneous Federated Learning**
 Yuwen Yang, Yuxiang Lu, **Suizhi Huang**, Shalayiding Sirejiding, Chang Liu, Muyang Yi, Zhaozhi Xie, Yue Ding, Hongtao Lu
 IEEE International Conference on Multimedia and Expo (ICME) 2024
6. **Federated Multi-Task Learning on Non-IID Data Silos: An Experimental Study**
 Yuwen Yang, Yuxiang Lu, **Suizhi Huang**, Shalayiding Sirejiding, Hongtao Lu, Yue Ding
 ACM SIGMM International Conference on Multimedia Retrieval (ICMR) 2024
7. **Adaptive Task-Wise Message Passing for Multi-Task Learning: A Spatial Interaction Perspective**
 Shalayiding Sirejiding, Bayram Bayramli, Yuxiang Lu, **Suizhi Huang**, Hongtao Lu, Yue Ding
 IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), *under revision*
8. **Adverbial Controllable Motion Synthesis and Editing via Guided Diffusion**
 Leizhi Li, Tianyu Li, **Suizhi Huang**, Yuxiang Lu, Hongtao Lu, Yue Ding
 ACM MULTIMEDIA (ACMMM) 2024 *under review*
9. **Expeditious Low Dose CT Reconstruction via Gaussian Splatting**
 Shaokai Wu, Yue Ding, Yuxiang Lu, **Suizhi Huang**, Hongtao Lu
 ACM MULTIMEDIA (ACMMM) 2024, *under review*
10. **CGIB: Understanding Multi-scale Feature Interactions for Multi-task Dense Prediction**
 Yue Ding, Shalayiding Sirejiding, Yuxiang Lu, **Suizhi Huang**, Bayram Bayramli, Hongtao Lu
 ACM MULTIMEDIA (ACMMM) 2024, *under review*
11. **Optimization of convolutional neural networks for background suppression in the PandaX-III experiment**
 Shangning Xia, **Suizhi Huang**, Kexin Xu, Tao Li, Xun Chen, Ke Han, Shaobo Wang
 Journal of Physics G: Nuclear and Particle Physics 2023

♥ HONORS AND AWARDS

Huatai Securities Science and Technology Scholarship	2024.1
Outstanding Graduate of SJTU	2022.6
Outstanding Student of SJTU	2021.10 & 2019.10
SJTU School Scholarship	2020 & 2021
SJTU SPEIT ARDIAN Enterprise Award	2019

⚙ SKILLS

Programming Languages: Python, C/C++
Development: PyTorch, OpenCV, Git, CUDA
English Proficiency: CET6: 564
Document Writing: L^AT_EX, Markdown