Xiaoshui Huang

https://xiaoshuihuang.github.io/
Shanghai AI Lab – Shanghai, China.
Research interests: 3D computer vision & Deep learning

Work Experience

Shanghai AI Laboratory: 2022.03-Present
Research Fellow

University of Sydney: 2019.09-2022.02
Postdoctoral Research Associate

University of Technology Sydney 2019.01-2019.09
Research Fellow

Tsinghua University: 2014.02-2015.02
Research Assistant

Teaching

UTS 48450: Real-time Operating System – Tutor

UTS 49238: Telecommunication Networks Management – Tutor

Education

University of Technology Sydney 2015.02-2019.03
Ph.D. in Computer Science

Selected Grants

1. **Xiaoshui Huang**, Matthew Field, Lois Holloway, Paul Keall, Shalini Vinod. "Analysing lung cancer guideline compliance with patient treatment outcomes using deep learning". *Ingham Research grant*. 2020–2021, **$20K.**

2. Ali Haidar, Lois Holloway, Matthew Field, **Xiaoshui Huang**, Nasreen Kaadan, Farhannah Aly, Vikneswary Batumalai. "Unsupervised Machine Learning for Detecting and Fixing Variations in Cancer Patients Medical Records". *Ingham Research grant*. 2020–2021, **$15K.**

Selected Patents

Lixin Fan, **Xiaoshui Huang**, Qiang Wu, Jian Zhang. Point cloud matching method. 2020.09, US10776936B2. **US patent**.

黄小水, 曲文涛, 左一帆, 欧阳万里. 一种用于点云理解的调优系统及方法. 专利公开号: CN115187710A. 2022.

黄小水, 贺通, 欧阳万里，黎盛，左一帆. 用2D预训练模型作为3D下游任务主干网络的方法及系统. 专利公开号: CN115719443A. 2023.

黄小水, 宫永顺, 郑晓, 欧阳万里. 一种基于扩散模型的3D预训练方法与系统. 专利申请号: 202311085634.7. 2023.

黄小水, 左一帆, 黎盛, 黄洲, 欧阳万里. 一种基于稀疏专家混合模型的点云处理方法与系统. 专利申请号: 202311084717.4. 2023.

Selected Publications

Journals:

- Yifan Zuo, Yaping Xu, Yifeng Zeng, Yuming Fang, **Xiaoshui Huang**, Jiebin Yan. A2GSTran: Depth Map Super-resolution via Asymmetric Attention with Guidance Selection. IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), 2023. **(JCR Q1)**
- Zongyi Xu*, **Xiaoshui Huang***, Bo Yuan, Yangfu Wang, Qianni Zhang, Weisheng Li, Xinbo Gao. Retrieval-and-Alignment based Large-scale Indoor Point Cloud Semantic Segmentation. Science China-Information Sciences, 2023. **(JCR Q1)**
- **Xiaoshui Huang**, Guofeng Mei, Jian Zhang. Cross-source Point Cloud Registration: Challenges, Progress and Prospects. Neurocomputing, 2023. **(JCR Q1)**
- Mingyang Zhao, **Xiaoshui Huang**, Jingen Jiang, Luntian Mou, Lei Ma, Dong-Ming Yan. Accurate Registration of Cross-Modality Geometry via Consistent Clustering. IEEE Transactions on Visualization and Computer Graphics (TVCG), 2023. **(JCR Q1)**
- **Xiaoshui Huang**; Wentao Qu; Yifan Zuo; Yuming Fang; Jian Zhang; Xiaowei Zhao. GMF: General Multimodal Fusion Framework for Correspondence Outlier Rejection. IEEE Robotics and Automation Letters (RA-L), 2022. **(JCR Q1)**
- **Xiaoshui Huang**; Wentao Qu; Yifan Zuo; Yuming Fang; Jian Zhang; Xiaowei Zhao. IMFNet: Interpretable Multimodal Fusion for Point Cloud Registration. IEEE Robotics and Automation Letters (RA-L), 2022. **(JCR Q1)**
- **Xiaoshui Huang**; Yangfu Wang; Guofeng Mei; Zongyi Xu; Yucheng Wang; Mohammed Bennamoun. Robust Real-world Point Cloud Registration by Inlier Detection. Computer Vision and Image Understanding (CVIU), 2022. **(JCR Q1)**
- **Xiaoshui Huang**; Sheng Li; Yifan Zuo; Yuming Fang; Jian Zhang; Xiaowei Zhao. Unsupervised Point Cloud Registration by Learning Unified Gaussian Mixture Models. IEEE Robotics and Automation Letters (RA-L), 2022. **(JCR Q1)**
- **Xiaoshui Huang**, Lixin Fan, Qiang Wu, Jian Zhang, Chun Yuan. A coarse-to-fine algorithm for matching and registration in 3D cross-sourced point clouds. Transactions on Circuits and Systems for Video Technology (T-CSVT). 2017. **(JCR Q1)**
- **Xiaoshui Huang**, Jian Zhang, Lixin Fan, Qiang Wu, Chun Yuan. "A Systematic Approach for Cross-Source Point Cloud Registration by Preserving Macro and Micro Structures," in IEEE Transactions on Image Processing (T-IP), vol. 26, no. 7, pp. 3261-3276, July 2017. **(JCR Q1)**
- Shuchao Pang, Anan Du, Mehmet Orgun; Yan Wang; Michael Sheng; Shoujin Wang; **Xiaoshui Huang**; Zhenmei Yu. Beyond CNNs: Exploiting Further Inherent Symmetries in Medical Image Segmentation. IEEE Transactions on Cybernetics. **(JCR Q1)**
- Yifan Zuo, Hao Wang, Yuming Fang, **Xiaoshui Huang**, Xiwu Shang, Qiang Wu. "MIG-net: Multi-scale Network Alternatively Guided by Intensity and Gradient Features for Depth Map Super-resolution", Accepted in IEEE Transactions Multimedia (TMM). 2021. **(JCR Q1)**

- Shoujin Wang, Longbing Cao, Liang Hu, Shlomo Berkovsky, **Xiaoshui Huang**, Lin Xiao, Wenpeng Lu. "Hierarchical attentive transaction embedding with intra- and inter-transaction dependencies for next-item recommendation". IEEE Intelligent Systems. 2020. **(JCR Q1)**

Conferences:

- **Xiaoshui Huang**, Zhou Huang, Sheng Li, Wentao Qu, Tong He, Yuenan Hou, Yifan Zuo, Wanli Ouyang. EPCL: Frozen CLIP Transformer is An Efficient Point Cloud Encoder. AAAI 2024. **(CCF A)**
- Xiaopei Wu, Liang Peng, Liang Xie, Yuenan HOU, Binbin Lin, **Xiaoshui Huang**$^{+}$, Haifeng Liu, Deng Cai^{+}, Wanli Ouyang. Semi-Supervised 3D Object Detection with PatchTeacher and PillarMix. AAAI 2024. **(CCF A)**
- Zhenfei Yin, Jiong Wang, Jianjian Cao, Zhelun Shi, Dingning Liu, Mukai Li, Lu Sheng, **Xiaoshui Huang**, Lei Bai, Zhiyong Wang, Wanli Ouyang, Jing Shao. LAMM: Language-Assisted Multi-Modal Instruction-Tuning Dataset, Framework, and Benchmark. NeurIPS 2023. **(CCF A)**
- Tianyu Huang, Bowen Dong, Yunhan Yang, **Xiaoshui Huang**, Rynson W.H. Lau, Wanli Ouyang, Wangmeng Zuo. CLIP2Point: Transfer CLIP to Point Cloud Classification with Image-Depth Pre-training. International Conference on Computer Vision (ICCV) 2023. **(CCF A)**
- Guofeng Mei, Hao Tang, **Xiaoshui Huang**, Weijie Wang,Juan Liu, Jian Zhang, Luc Van Gool, Qiang Wu. Unsupervised Deep Probabilistic Approach for Partial Point Cloud Registration. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2023. **(CCF A)**
- Mingzhi Yuan*, **Xiaoshui Huang***, Kexue Fu*, Zhihao Li, Manning Wang. Boosting 3D Point Cloud Registration by Transferring Multi-modality Knowledge. In the 2023 IEEE International Conference on Robotics and Automation (ICRA) 2023. **(CCF B)**
- **Xiaoshui Huang**, Guofeng Mei, Jian Zhang. Feature-metric Registration: A Fast Semi-supervised Approach for Robust Point Cloud Registration without Correspondences. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2020. **(CCF A)**
- **Xiaoshui Huang**, Lixin Fan, Qiang Wu, Jian Zhang, Chun Yuan. Fast Registration for cross-source point clouds by using weak regional affinity and pixel-wise refinement. International Conference of Multimedia Expro (ICME) 2019. **(CCF B)**
- **Xiaoshui Huang**, Chun Yuan, and Jian Zhang, 2015, September. Graph Cuts Stereo Matching Based on Patch-Match and Ground Control Points Constraint. In Pacific Rim Conference on Multimedia (PCM) (pp. 14-23). Springer International Publishing. **(CCF C)**
- **Xiaoshui Huang**, Jian Zhang, Qiang Wu, Lixin Fan, Chun Yuan. A coarse-to-fine algorithm for registration in 3D street-view cross-source point clouds. In 2016 International Conference on Digital Image Computing: Techniques and Applications (DICTA) (pp. 1-6). IEEE.
- **Xiaoshui Huang**, Lixin Fan, Jian Zhang, Qiang Wu, and Chun Yuan, 2016. Real Time Complete Dense Depth Reconstruction for a Monocular Camera. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW) (pp. 32-37). IEEE.

- **Xiaoshui Huang**, Jian Zhang, Qiang Wu, Chun Yuan, and Lixin Fan, 2015, November. Dense Correspondence Using Non-local DAISY Forest. In 2015 International Conference on Digital Image Computing: Techniques and Applications (DICTA) (pp. 1-8). IEEE.
- Maosheng Sun, **Xiaoshui Huang**, Zeren Sun, Qiong Wang, Yazhou Yao. Unsupervised Pre-training for 3D Object Detection with Transformer. PRCV 2022. **(CCF C)**
- Guofeng Mei, **Xiaoshui Huang**, Jian Zhang, Qiang Wu. Overlapping guided coarse-to-fine correspondence prediction for point cloud registration. ICME 2022. **(CCF B)**
- Guofeng Mei, **Xiaoshui Huang**, Jian Zhang, Qiang Wu. Partial Point Cloud Registration via Soft Segmentation. ICIP 2022. **(CCF C)**
- Guofeng Mei, **Xiaoshui Huang**, Juan Liu, Jian Zhang, Qiang Wu. Unsupervised Point Cloud Pre-training via Contrasting and Clustering. ICIP 2022. **(CCF C)**
- STEVE LING, Yujiao Wu, Steven Su, Ma Jie, **Xiaoshui Huang**. DeepMMSA: A Novel Multimodal Deep Learning Framework for Non-small Cell Lung Cancer Survival Analysis. IEEE International Conference on Systems, Man, and Cybernetics (SMC) 2021. **(CCF C)**
- Anan Du, Shuchao Pang, **Xiaoshui Huang**, Jian Zhang, Qiang Wu. Exploring long-short-term context for point cloud semantic segmentation. International Conference on Image Processing (ICIP) 2020. **(CCF C)**
- Tao Chen, Jian Zhang, Guo-Sen Xie, Yazhou Yao, **Xiaoshui Huang**, Zhenmin Tang. Classification Constrained Discriminator for Domain Adaptive Semantic Segmentation. International Conference of Multimedia Expro (ICME) 2020. **(CCF B)**
- Anan Du, **Xiaoshui Huang**, Jian Zhang, Lingxiang Yao, Qiang Wu. KPSNET: Keypoint detection and feature extraction for point cloud registration. International Conference on Image Processing (ICIP) 2019. **(CCF C)**
- Shoujin Wang, Liang Hu, Longbing Cao, **Xiaoshui Huang**, Defu Lian, Wei Liu. Attention-based Transactional Context Embedding for Next-Item Recommendation. AAAi 2018. **(CCF A)**

Awards

UTS International research scholarship.
UTS FEIT Research Scholarship.
UTS FEIT One-off Research Scholarship.
Higher Degree by Research Publication Award.
Nokia patent award.

Academic Service

Associate Editor:
IEEE Robotics and Automation Letters (RA-L)

Journal Reviewer:
IEEE Transactions on Pattern Recognition and Machine Learning (TPAMI)
International Journal of Computer Vision (IJCV)
IEEE Transactions on Image Processing (TIP)
IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
IEEE Transactions on Multimedia (TMM)

ACM Computing Surveys
IEEE Intelligent Systems
IEEE Sensors Journal
IEEE MultiMedia
EURASIP Journal on Image and Video Processing

Conference Reviewer:
ICLR 2022, 2023, 2024
NeurIPS 2020, 2021, 2022
CVPR 2021, 2022, 2023
ICCV 2021
ECCV 2022
IJCAI 2020, 2021, 2022
AAAI 2021, 2022
ICME 2018, 2019
ICIP 2017
DICTA 2016