

Jieji Ren

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Education

Shanghai Jiao Tong University, Ph.D, Mechanical Engineering, China, 2022

Harbin Institute of Technology, M.S., Optics, China, 2015

Harbin Institute of Technology, B.S., Optical Information Science and Technology, China, 2013

Harbin Institute of Technology, B.Eng., Minor in Communications Engineering, China, 2013

Employment

School of Mechanical Engineering, Shanghai Jiao Tong University,
Assistant Research (supervised by Guoying Gu), 2022 - Present

Publications

- Zijian Qin*, **Jieji Ren***, Feifei Chen, Jiang Zou, Guoying Gu. "Automatic Design Framework of Dielectric Elastomer Actuators: Neural Network-Based Real-Time Simulation, Genetic Algorithm-Based Electrode Optimization, and Experimental Verification." *Soft Robotics*, 2024
- **Jieji Ren**, Heng Guo, Zaiyan Yang, Jinnuo Zhang, Yueshi Dong, Ningbin Zhang, Boxin Shi, Jiang Zou, Guoying Gu. "SymmeTac: Symmetric Color LED Driven Efficient Photometric Stereo Reconstruction Methods for Camera-based Tactile Sensors." *arXiv preprint*, 2024
- **Jieji Ren**, Yueshi Dong, Yuru Gong, Ningbin Zhang, Jiang Zou, Guoying Gu. "Soft camera-based tactile sensor for compliant grasping and manipulation." *Proceedings of the ViTac Workshop, IEEE International Conference on Robotics and Automation (ICRA)*, 2024
- Zequn Shen, **Jieji Ren**, Ningbin Zhang, Jinhao Li, Guoying Gu. "Hierarchically-Interlocked, Three-Axis soft Iontronic Sensor for Omnidirectional Shear and Normal Forces." *Advanced Materials Technologies*, 2024
- Wenxin Du, Wenqiang Xu, **Jieji Ren**, Zhenjun Yu, Cewu Lu. "TacIPC: Intersection-and Inversion-free FEM-based Elastomer Simulation For Optical Tactile Sensors." *IEEE Robotics and Automation Letters (RA-L)*, 2024
- Can Zhao, **Jieji Ren**, Hexi Yu, Daolin Ma. "In-situ mechanical calibration for vision-based tactile sensors." *2023 IEEE International Conference on Robotics and Automation (ICRA)*, 2023
- Haipeng Xu, Yu Rong, **Jieji Ren**, Ningbin Zhang, Yi Zhao, Xinyu Yang, Zhenpu Zhu, Guoying Gu. "A Learning-Based Sensor Array for Untethered Soft Prosthetic Hand Aiming at Restoring Tactile Sensation." *Advanced intelligent systems*, 2024
- **Jieji Ren**, Jiang Zou, Guoying Gu. "Mc-Tac: Modular camera-based tactile sensor for robot gripper." *International Conference on Intelligent Robotics and Applications (ICIRA)*, 2023

- Zhenjun Yu, Wenqiang Xu, Siqiong Yao, **Jieji Ren**, Tutian Tang, Yutong Li, Guoying Gu, Cewu Lu. "Precise robotic needle-threading with tactile perception and reinforcement learning." *Conference on Robot Learning (CoRL)*, 2023
- Yueshi Dong*, **Jieji Ren***, Ningbin Zhang, Weijing Zhao, Jian Zhou, Guoying Gu. "High-density Baropodometry Platform Based on Vision Based Tactile Sensing." *International Conference of the Engineering in Medicine and Biology Society (EMBC)*, 2024.
- Heng Guo*, **Jieji Ren***, Feishi Wang, Boxin Shi, Mingjun Ren, Yasuyuki Matsushita. "DiLiGenRT: A Photometric Stereo Dataset with Quantified Roughness and Translucency." *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024
- Wenqiang Xu, Dongzhe Zheng, Yutong Li, **Jieji Ren**, Cewu Lu. "Differentiable Fluid Physics Parameter Identification By Stirring and For Stirring." *International Conference on Intelligent Robots and Systems (IROS)*, 2024
- Xingyu Chen, **Jieji Ren**, Guoying Gu, Jiang Zou. "Dynamic Model Based Neural Implicit Embedded Tracking Control Approach for Dielectric Elastomer Actuators With Rate-Dependent Viscoelasticity." *IEEE Robotics and Automation Letters (RA-L)*, 2024
- Qianyu Guo, **Jieji Ren**, Haofen Wang, Tianxing Wu, Weifeng Ge, Wenqiang Zhang. "Visual-Language Collaborative Representation Network for Broad-Domain Few-Shot Image Classification." *Proceedings of the 32nd ACM International Conference on Multimedia*, 2024
- Bohan Yu, **Jieji Ren**, Jin Han, Feishi Wang, Jinxiu Liang, Boxin Shi. "EventPS: Real-Time Photometric Stereo Using an Event Camera." *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024 (*Best Paper Runners-up*)
- Hongjie Fang, Hao-Shu Fang, Yiming Wang, **Jieji Ren**, Jingjing Chen, Ruo Zhang, Weiming Wang, Cewu Lu. "Airexo: Low-cost exoskeletons for learning whole-arm manipulation in the wild." *2024 IEEE International Conference on Robotics and Automation (ICRA)*, 2024
- Jun Hoong Chan, Bohan Yu, Heng Guo, **Jieji Ren**, Zongqing Lu, Boxin Shi. "ReLeaPS: Reinforcement Learning-based Illumination Planning for Generalized Photometric Stereo." *Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV)*, 2023
- Yijun Shen, **Jieji Ren**, Nuodi Huang, Yang Zhang, Xinquan Zhang, Limin Zhu. "Surface form inspection with contact coordinate measurement: a review." *International Journal of Extreme Manufacturing*, 2023
- Jingbo Nan, Kechen Zhu, **Jieji Ren**, Weiqi Yao, Xiaotong Peng. "Assessing micrometer-scale contamination from organic materials in serpentinite analysis." *Science of The Total Environment*, 2023
- Jiang Zou, Shakiru Olajide Kassim, **Jieji Ren**, Vahid Vaziri, Sumeet S Aphale, Guoying Gu. "A generalized motion control framework of dielectric elastomer actuators: dynamic modeling, sliding-mode control and experimental evaluation." *IEEE Transactions on Robotics (T-RO 2023)*, 2023
- Lijian Sun, Wenguang Zhang, **Jieji Ren**, Xiaogang Xu. "A Gaussian process guided super resolution sampling strategy for the efficient recovery of complex surfaces." *Measurement Science and Technology*, 2023
- Fang Yan, **Jieji Ren**, Zhifeng Shao, Xiaowei Li. "An efficient 3D extraction and reconstruction method for myelinated axons of mouse cerebral cortex based on mixed intelligence." *BIO Web of Conferences*, 2023
- Feishi Wang*, **Jieji Ren***, Heng Guo, Mingjun Ren, Boxin Shi. "Diligent-pi: Photometric stereo for planar surfaces with rich details-benchmark dataset and beyond." *Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV)*, 2023

- **Jieji Ren**, Feishi Wang, Jiahao Zhang, Qian Zheng, Mingjun Ren, Boxin Shi. “Diligent102: A photometric stereo benchmark dataset with controlled shape and material variation.” *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022
- **Jieji Ren**, Qianyu Guo, Mingjun Ren, Wenqiang Zhang, Lijian Sun, Limin Zhu. “Prosformer: Accurate Surface Reconstruction for Sparse Profilometer Measurement with Transformer.” *2022 International Conference on Sensing, Measurement & Data Analytics in the era of Artificial Intelligence (ICSMD)*, 2022
- Xiangchao Yan, **Jieji Ren**, Hui Yao, Mingjun Ren. “Self-supervision based super-resolution approach for light field refocused image.” *Fourteenth International Conference on Digital Image Processing (ICDIP 2022)*, 2022
- Xiaohan Pei, Mingjun Ren, Xi Wang, **Jieji Ren**, Limin Zhu, Xiangqian Jiang. “Profile measurement of non-Lambertian surfaces by integrating fringe projection profilometry with near-field photometric stereo.” *Measurement*, 2022
- Jiang Zou, James DJ MacLean, **Jieji Ren**, Sumeet S Aphale, Guoying Gu. “Proxy-based sliding-mode tracking control of dielectric elastomer actuators through eliminating rate-dependent viscoelasticity.” *Smart Materials and Structures*, 2022
- Junzheng Li, **Jieji Ren**, Mingjun Ren, Yu Zheng, Xinyi Le. “Neural process enhanced machining error evaluation for coordinate measuring machines.” *IEEE Transactions on Instrumentation and Measurement*, 2022
- Liyang Wang, and Wei Cheng, and Jingjing Zhu, and Wenyao Li, and Danyang Li, and Xi Yang, and Weixin Zhao, and Mingjun Ren, and Jieji Ren, and Xiumei Mo, Qiang Fu, Kaile Zhang. “Electrospun nanoyarn and exosomes of adipose-derived stem cells for urethral regeneration: Evaluations in vitro and in vivo.” *Colloids and Surfaces B: Biointerfaces*, 2022
- **Jieji Ren**, Mingjun Ren, Lijian Sun, Limin Zhu, Xiangqian Jiang. “Generative model-driven sampling strategy for the high-efficiency measurement of complex surfaces on coordinate measuring machines.” *IEEE Transactions on Instrumentation and Measurement*, 2021
- Lijian Sun, **Jieji Ren**, Xiaogang Xu. “A data-driven machining errors recovery method for complex surfaces with limited measurement points.” *Measurement*, 2021
- **Jieji Ren**, Xiangchao Yan, Lijian Sun, Mingjun Ren. “Self-learning based highly efficient sampling strategy for complex surface reconstruction on contact measurements.” *2021 3rd International Conference on Industrial Artificial Intelligence (IAI)*, 2021
- **Jieji Ren**, Zhenxiong Jian, Xi Wang, Mingjun Ren, Limin Zhu, Xiangqian Jiang. “Complex surface reconstruction based on fusion of surface normals and sparse depth measurement.” *IEEE Transactions on Instrumentation and Measurement*, 2021
- **Jieji Ren**, Mingjun Ren. “Fast surface topography reconstruction method for profilometer measurement based on neural continuous representation.” *2021 International Conference on Sensing, Measurement & Data Analytics in the era of Artificial Intelligence (ICSMD)*, 2021
- **Jieji Ren**, Mingjun Ren, Runxing Liu, Lijian Sun, Kaile Zhang. “An effective imaging system for 3D detection of occluded objects.” *Proceedings of the 2021 4th International Conference on Image and Graphics Processing (ICIGP 2021)*, 2021
- Hui Yao, **Jieji Ren**, Xiangchao Yan, Mingjun Ren. “Cooperative light-field image super-resolution based on multi-modality embedding and fusion with frequency attention.” *IEEE Signal Processing Letters*, 2021
- **Jieji Ren**, Xi Wang, Zhenxiong Jian, Mingjun Ren. “Multiscale Convolutional Fusion Network for Non-Lambertian Photometric Stereo.” *IEEE Signal Processing Letters*, 2020

- Mingjun Ren, **Jieji Ren**, Xi Wang, Feng Gao, Limin Zhu, Zhenqiang Yao. “Multi-scale measurement of high-reflective surfaces by integrating near-field photometric stereo with touch trigger probe.” *CIRP Annals*, 2020
- Mingjun Ren, Runxing Liu, Haibo Hong, **Jieji Ren**, Gaobo Xiao. “Fast object detection in light field imaging by integrating deep learning with defocusing.” *Applied Sciences*, 2017

Service and Talks

Area Chair, Embodied Tactile Sensing, China Embodied AI Conference (CEAI), 2024

Outstanding Reviewers, Computer Vision and Patter Recognition (CVPR), 2024

Reviewer, International Conference on Robotics and Automation (ICRA), 2024

Reviewer, International Conference on Intelligent Robots and Systems (IROS), 2024

Reviewer, AAAI Conference on Artificial Intelligence, 2024

Reviewer, Measurement

Reviewer, Computer Vision and Image Understanding

Reviewer, Neurocomputing

Reviewer, Tsinghua Science and Technology

Reviewer, Precision Engineering

Invited Talk at ROSCon, China, 2024

Invited Talk at CEAI, 2024

Invited Talk at ICCSIP, 2024

Invited Talk at D-Robotics, 2024

Invited Talk at Sun Yat-sen University, 2024