Heng Guo

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Homepage

Experience

Specially-Appointed Researcher — Beiing, China
School of Artificial Intelligence, Beijing University of Posts and Telecommunications — *Nov. 2023 – present*

Specially-Appointed Assistant Professor — Osaka, Japan
Osaka University — *May. 2022 – Oct. 2023*

Research Assistant — Osaka, Japan
Osaka University — *Oct. 2018 – Apr. 2022*

Research Intern — Yokohama, Japan
Japan Institute of Oppo Mobile Telecommunications Corp., Ltd — *June 2020 – Oct. 2020*

Research Intern — Beijing, China
AI Lab of Qihoo 360 Technology Corp., Ltd. — *June 2016 – Jan. 2017*

Education

University of Electronic Science and Technology of China (UESTC) — Chengdu, China
Bachelor of Electronic Engineer — *Aug. 2015 – Sep. 2011*

University of Electronic Science and Technology of China (UESTC) — Chengdu, China
Master of Signal Processing | Supervisors: Bing Zeng, Shuaicheng Liu — *Aug. 2018 – Sep. 2015*

Osaka University — Osaka, Japan
Doctor of Computer Science | Supervisors: Yasuyuki Matsushita, Boxin Shi — *Present – Sep. 2018*

Fundings

NSFC Excellent Young Scientists Fund (Overseas), **Pi**	2024 – 2026
NSFC General Program, **Pi**	2024 – 2027
NSFC Joint Fund for Enterprise Innovation and Development, **Participant**	2024 – 2027
Beijing–Tianjin–Hebei Basic Research Program, **Pi**	2024 – 2027
Hebei Provincial Major Science and Technology Support Program, **Pi**	2024 – 2026
Beijing Municipal International (Hong Kong, Macao, and Taiwan) Joint R&D Program, **Pi**	2025 – 2027

Publication

(∗ Equal contribution, † Corresponding author.)

[1] Wenjie Li, **Heng Guo**†, Yuefeng Hou, Zhanyu Ma. "FourierSR: A Fourier Token-based Plugin for Efficient Image Super-Resolution." IEEE Transactions on Image Processing. (**TIP 2026**).

[2] Wenjie Li, Jinglei Shi, Jin Han, **Heng Guo**†, Zhanyu Ma. "Seeing Through the Rain: Resolving High-Frequency Conflicts in Deraining and Super-Resolution via Diffusion Guidance." AAAI Conference on Artificial Intelligence. (**AAAI 2025**).

[3] Zhenyu Jin, Wenjie Li, Zhanyu Ma, **Heng Guo**†. "SpecGen: Neural Spectral BRDF Generation via Spectral-Spatial Tri-plane Aggregation." IEEE Winter Conference on Applications of Computer Vision. (**WACV 2026**).

[4] Wenjie Li, Xiangyi Wang, **Heng Guo**†, Guangwei Gao, Zhanyu Ma. "Self-Supervised Selective-Guided Diffusion Model for Old-Photo Face Restoration." Annual Conference on Neural Information Processing Systems. (**NeurIPS 2025**).

[5] Wenjie Li, **Heng Guo**†, Yuefeng Hou, Guangwei Gao, Zhanyu Ma. "Dual-domain Modulation Network for Lightweight Image Super-Resolution." IEEE Transactions on Multimedia. (**TMM 2025**).

[6] Yufei Han, Bowen Tie, **Heng Guo**†, Youwei Lyu, Si Li†, Boxin Shi, Yunpeng Jia, Zhanyu Ma. "PolGS: Polarimetric Gaussian Splatting for Fast Reflective Surface Reconstruction." IEEE International Conference on Computer Vision. (**ICCV 2025**).

[7] Kailong Zhang, Youwei Lyu, **Heng Guo**†, Si Li, Zhanyu Ma, Boxin Shi. "PolarAnything: Diffusion-based Polarimetric Image Synthesis." IEEE International Conference on Computer Vision. (**ICCV 2025 Highlight**).

[8] Chu Zhou, Yixin Yang, Junda Liao, **Heng Guo**, Boxin Shi, Imari Sato. "Polarimetric Neural Field with Unified Complex-Valued Wavefunction." IEEE International Conference on Computer Vision. (**ICCV 2025**).

[9] Mingzhi Pei, Xu Cao, Xiangyi Wang, **Heng Guo**†, Zhanyu Ma. "PMNI: Pose-free Multi-view Normal Integration for Reflective and Textureless Surface Reconstruction." IEEE Conference on Computer Vision and Pattern Recognition. (**CVPR 2025**).

[10] Shuangfan Zhou, Chu Zhou, Youwei Lyu, **Heng Guo**†, Zhanyu Ma, Boxin Shi, Imari Sato. "PIDSR: Complementary Polarized Image Demosaicing and Super-Resolution." IEEE Conference on Computer Vision and Pattern Recognition. (**CVPR 2025**).

[11] Mengqiu Xu, Kaixin Chen, **Heng Guo**, Yixiang Huang, Ming Wu, Zhenwei Shi, Chuang Zhang, Jun Guo. "MFogHub: Bridging Multi-Regional and Multi-Satellite Data for Global Marine Fog Detection and Forecasting." IEEE Conference on Computer Vision and Pattern Recognition. (**CVPR 2025**).

[12] Songyun Yang, Yufei Han, Jilong Zhang, Kongming Liang, Peng Yu, Zhaowei Qu, **Heng Guo**. "RotatedMVPS: Multi-view Photometric Stereo with Rotated Natural Light." IEEE Conference on Multimedia and Expo. (**ICME 2025 Oral**).

[13] Youwei Lyu*, **Heng Guo***, Kailong Zhang, Si Li, Boxin Shi. "SfPUEL: Shape from Polarization under Unknown Environment." Annual Conference on Neural Information Processing Systems. (**NeurIPS 2024**).

[14] Li Wenjie, **Heng Guo**†, Xuannan Liu, Kongming Liang, Jiani Hu, Zhanyu Ma, Jun Guo. "Efficient Face Super-Resolution via Wavelet-Based Feature Enhancement Network." ACM International Conference on Multimedia. (**ACM MM 2024**).

[15] **Heng Guo***, Jieji Ren*, Feishi Wang*, Boxin Shi, Mingjun Ren, Yasuyuki Matsushita. "DiLiGenRT: A Photometric Stereo Dataset with Quantified Roughness and Translucency." IEEE Conference on Computer Vision and Pattern Recognition. (**CVPR 2024**).

[16] Yufei Han, **Heng Guo**†, Koki Fukai, Hiroaki Santo, Boxin Shi, Fumio Okura, Zhanyu Ma, Yunpeng Jia. "NeRSP: Neural 3D Reconstruction for Reflective Objects with Sparse Polarized Images." IEEE Conference on Computer Vision and Pattern Recognition. (**CVPR 2024**).

[17] Feishi Wang*, Jieji Ren*, **Heng Guo***, Mingjun Ren, Boxin Shi. "DiLiGenT-Pi: Photometric Stereo for Planar Surfaces with Rich Details – Benchmark Dataset and Beyond." International Conference on Computer Vision. (**ICCV 2023**).

[18] Jun Hoong Chan, Bohan Yu, **Heng Guo**, Jieji Ren, Zongqing Lu, Boxin Shi. "ReLeaPS: Reinforcement Learning-based Illumination Planning for Generalized Photometric Stereo." International Conference on Computer Vision. (**ICCV 2023**).

[19] Jipeng Lv, **Heng Guo**†, Guanying Chen, Jinxiu Liang, Boxin Shi. "Non-Lambertian Multispectral Photometric Stereo via Spectral Reflectance Decomposition." International Joint Conferences on Artificial Intelligence (**IJCAI 2023**).

[20] **Heng Guo**, Boxin Shi, Yasuyuki Matsushita. "Neural BRDF Plugin for Unsupervised Photometric Stereo." IEEE International Conference on Network Intelligence and Digital Content (**IC-NIDC 2023 best paper**).

[21] Feiran Li*, **Heng Guo***, Hiroaki Santo, Fumio Okura, Yasuyuki Matsushita. "Learning to Synthesize Photorealistic Dual-pixel Images from RGBD frames." International Conference on Computational Photography (**ICCP 2023**).

[22] Lilika Makabe, **Heng Guo**, Hiroaki Santo, Fumio Okura, Yasuyuki Matsushita. "Near-light Photometric Stereo with Symmetric Lights." International Conference on Computational Photography. (**ICCP 2023**).

[23] **Heng Guo**, Fumio Okura, Boxin Shi, Takuya Funatomi, Yasuhiro Mukaigawa, Yasuyuki Matsushita. "Multispectral Photometric Stereo for Spatially-Varying Spectral Reflectances." International Journal of Computer Vision. (**IJCV 2022**).

[24] **Heng Guo***, Zhipeng Mo*, Boxin Shi, Feng Lu, Sai-Kit Yeung, Ping Tan, Yasuyuki Matsushita. "Patch-based Uncalibrated Photometric Stereo under Natural Illumination." IEEE Transactions on Pattern Analysis and Machine Intelligence. (**TPAMI 2021**).

[25] **Heng Guo**, Fumio Okura, Boxin Shi, Takuya Funatomi, Yasuhiro Mukaigawa, Yasuyuki Matsushita. "Multispectral Photometric Stereo for Spatially-Varying Spectral Reflectances: A Well-posed Problem?" IEEE Conference on Computer Vision and Pattern Recognition. (**CVPR 2021**).

[26] **Heng Guo**, Boxin Shi, Michael Waechter, Yasuyuki Matsushita. "Self-calibrating Near-light Photometric Stereo under Anisotropic Light Emission." Meeting on Image Recognition and Understanding (**MIRU 2020 outstanding paper**).

[27] **Heng Guo**, Shuaicheng Liu, Shuyuan Zhu, Heng Tao Shen, Bing Zeng. "View-Consistent MeshFlow for Stereoscopic Video Stabilization." IEEE Transactions on Computational Imaging. (**TCI 2018**).

[28] **Heng Guo**, Shuaicheng Liu, Tong He, Shuyuan Zhu, Bing Zeng, Moncef Gabbouj. "Joint Video Stitching and Stabilization from Moving Cameras." IEEE Transactions on Image Processing (**TIP 2016**).

[29] **Heng Guo**, Shuaicheng Liu, Shuyuan Zhu, Bing Zeng. "Joint Bundled Camera Paths for Stereoscopic Video Stabilization." International Conference on Image Processing. (**ICIP 2016**) (Oral).

Academic Services

- **Journal Reviewer**: IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), International Journal of Computer Vision (IJCV)
- **Conference Reviewer**: CVPR, ECCV, ICCV, NeurIPS, AAAI
- **Demo Chair**: ACCV 2026
- **Forum Chair**: The 24th CCF-CV "Vision Without Limits" Seminar Series
- **Organizing Chair**: Intelligent Scientific Imaging Forum, CSIG Young Scientists Conference 2025
- **Organizing Chair**: CAA Conference on Artificial Intelligence and Robotics Education 2025
- **Invited Speaker**: The 22nd Forum on Information Technology (FIT), Japan

Honors

Excellent Master Thesis of UESTC (Top 3%)	June 2018
Excellent Postgraduate of UESTC (Top 6%))	June 2018
National Scholarship of China(Top 2%))	Oct. 2017
Academic Scholarship of UESTC (Top 10%)	2015 & 2016 & 2017
Excellent Graduate of UESTC (Top 7%)	Sep. 2015
The 1st Prize of National College Student Information Security Contest	July 2014
The 2nd Prize of National Undergraduate Electronics Design Contest	Sep. 2013
People's Scholarship (Top 15%)	2011 & 2012 & 2013