Huangying ZHAN, Ph.D.

Staff Research Engineer/Scientist

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Education

2017.02 - 2020.08 **Ph.D. The University of Adelaide** Adelaide, Australia
Computer Science (Computer Vision and Machine Learning)
Thesis: Self-Supervised Learning for Geometry

2012.09 - 2016.07 **B.Eng, The Chinese University of Hong Kong** Hong Kong, China
Electronic Engineering (First Class Honours), Major GPA: 3.8/4.0
Thesis: Large-Scale Clothing Image Classification and Retrieval

Experience

2022.10 - Present **Staff Research Engineer/Scientist** InnoPeak Technology, Inc. (a.k.a. OPPO US Research Center)
Project: R&D for XR(VR/AR/MR)
Developing cutting-edge technologies for XR applications.

2020.08 - 2022.09 **Postdoctoral Researcher** Australian Institute for Machine Learning, The University of Adelaide
Project: Active visual navigation in an unexplored environment
Developing cutting-edge vision navigation technologies in unexplored environments using deep learning methods.
- new dataset creation and processing
- implementing, training and testing deep learning models
- communication and discussion with chief investigators

2018.07 - 2018.10 **HoloLens Research Intern** Microsoft Redmond
Project: Learning stereo by walking around with a HoloLens
Developing semi-supervised deep learning models for stereo matching.
- a large-scale dataset acquisition, preprocessing, and creation for stereo matching
- training deep neural networks for stereo matching using semi-supervised learning
- collaborating with a group of senior researchers and engineers

2017.02 - 2020.08 **Ph.D. Researcher** Australian Centre for Robotic Vision
Project: Scene Understanding
Developing cutting-edge computer vision and deep learning technologies for robotic applications
- develop state-of-the-art visual odometry method using deep learning and geometry
- develop state-of-the-art depth estimation methods using self-supervised learning
- lead a team in creating a system for topological mapping, which is included in the Centre legacy – “Best of ACRV”

2016.08 - 2016.11 **Visiting Research Scholar** Unmanned System Research Group, The National University of Singapore
Project: Deep learning for drone related applications
Developing deep learning-based methods for drone-related applications
- developing a drone landing marker detection method based on Faster-RCNN
- developing a deep learning based 2D LiDAR scan matching and loop closure algorithm

2015.06 - 2015.08 **Summer Research Intern** The Chinese University of Hong Kong
Project: Quantization training for CNNs.
Developing a method to reduce quantization error of neural networks
- developing a training method to reduce error when converting neural network weights from floating-point to fixed-point representation

Academic Activities

2021.02 - present **Postgraduate Supervision** The University of Adelaide
Completed: Master of Computer Science (1)
Ongoing: Master of Data Science (1), Master of Machine Learning (1)

2018.02 - 2020.06 **University Tutoring** The University of Adelaide
- Introduction to MATLAB and Excel;
- Scientific Computing;
- Foundations of Computer Science

2018 - present **Reviewer of Conference/Journal**
Computer Vision: CVPR (2019-2022); ICCV (2019, 2021); ECCV (2020, 2022); ICPR (2020); ACCV (2022); TMM;
Robotic: ICRA (2020-2022); IROS (2019-2022); RAL (2019-2022)
Artificial intelligence: NeuIPS (2020), AAAI (2020-2023)

Awards / Honors

2020.11 **Australian Distinguished Talent Visa (Permanent Residency)** Australian Government
Recipient of the Australian Distinguished Talent Visa (Global Talent Independent Program) for internationally recognized record of exceptional and outstanding achievements in the Data Science sector

2019.11 **Best Three Minute Thesis** ACRV Robotic Vision Symposium 2019
Best 3MT is presented to the PhD researcher judged to have best communicated their work in robotic vision to audiences in only 180 seconds.

2018-2020 **Australian Centre for Robotic Vision Top-up Scholarship** Australian Centre for Robotic Vision
Top-up scholarship awarded to associated PhD students to support their study.

2017-2020 **University of Adelaide International Wildcard Scholarship** The University of Adelaide
Full fee scholarship awarded to exceptional international students to support their study.

2012-2016 **Academic Honors and Scholarships at CUHK** The Chinese University of Hong Kong
- College Head's List (United College; 2016)
- Dean's List (Faculty of Engineering; 2014,2016)
- Professor Charles K. Kao Research Exchange Scholarship (2016)
- HKEIA Project Competition Award, Merit (2016)
- Final-Year Project Poster Award, 3rd Prize (2016)
- Undergraduate Summer Research Internship Scholarship (2015)
- HKSAR Talent Development Scholarship (2014)
- Suga International Holdings Limited Scholarship (2014)
- Simatelex Charitable Foundation Scholarship (2014)
- Tsang Shui Tim Scholarship (2014)
- Electronic Engineering Scholarship (2012)

Skills

Programming Languages	Python, C++, MATLAB, LaTeX
Python/Machine Learning	PyTorch, Caffe, TensorFlow, scikit-learn, numpy, panda, matplotlib, OpenCV
Software Engineering	Linux (Ubuntu), Windows, Git, Docker, conda, Kubernetes, GCP
Languages	English (Proficient), Chinese (Native), Cantonese(Native), Hokkien(Native)

Publications

Summary (Google Scholar)

10+ publications in top conferences/journals in the field of computer vision, machine learning, and robotics.
Citation: **850+***; H-index:* **8** (**updated 15/03/2022**)

DF-VO: What Should Be Learnt for Visual Odometry?
Huangying Zhan, Chamara Saroj Weerasekera, Jia-Wang Bian, Ravi Garg, Ian Reid
Arxiv preprint (**Arxiv-2021**)

NVSS: High-quality Novel View Selfie Synthesis
Huangying Zhan*, Jia-Wang Bian*, Ian Reid
International Conference on 3D Vision (**3DV-2021**)

Unsupervised Scale-consistent Depth Learning from Video
Jia-Wang Bian, **H. Zhan**, Naiyan Wang, Zhichao Li, Le Zhang, Chunhua Shen, Ming-Ming Cheng, Ian Reid
International Journal of Computer Vision (**IJCV-2021**)

Auto-Rectify Network for Unsupervised Indoor Depth Estimation
Jia-Wang Bian, **Huangying Zhan**, Naiyan Wang, Tat-Jun Chin, Chunhua Shen, Ian Reid
IEEE Transcations on Pattern ANalysis and Machine Intelligence (**TPAMI-2021**)

Visual Odometry Revisited: What Should Be Learnt?
Huangying Zhan, Chamara Saroj Weerasekera, Jiawang Bian, Ian Reid
IEEE/RAS International Conference on Robotics and Automation (**ICRA-2020**)

Unsupervised Scale-consistent Depth and Ego-motion Learning from Monocular Video
Jia-Wang Bian, Zhichao Li, Naiyan Wang, **Huangying Zhan**, Chunhua Shen, Ming-Ming Cheng, Ian Reid
Thirty-third Conference on Neural Information Processing Systems (NeurIPS) (**NeurIPS-2019**)

Camera Relocalization by Exploiting Multi-View Constraints for Scene Coordinates Regression
Ming Cai, **Huangying Zhan**, Chamara Saroj Weerasekera, Kejie Li, Ian Reid
IEEE International Conference on Computer Vision Workshop (**ICCVW-2019**)

Learning Stereo By Walking Around With a HoloLens
Huangying Zhan, Yuri Pekelny, Osman Ulusoy
Computer Vision Applications for Mixed Reality Headsets Workshop in CVPR 2019 (**CVPRW-2019**)

Self-supervised Learning for Single View Depth and Surface Normal Estimation
Huangying Zhan, Chamara Saroj Weerasekera, Ravi Garg, Ian Reid
IEEE/RAS International Conference on Robotics and Automation (**ICRA-2019**)

Efficient Dense Point Cloud Object Reconstruction Using Deformation Vector Fields
Kejie Li, Trung Pham, **Huangying Zhan**, Ian Reid
European Conference on Computer Vision (**ECCV-2018**)

Unsupervised Learning of Monocular Depth Estimation and Visual Odometry with Deep Feature Reconstruction
Huangying Zhan, Ravi Garg, Chamara Saroj Weerasekera, Kejie Li, Harsh Agarwal, Ian Reid
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR-2018**)

Deep Learning for 2D Scan Matching and Loop Closure
Huangying Zhan*, Jiaxin Li*, Ben M Chen, Ian Reid, Gim Hee Lee
IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS-2017**)