

# WEIJIAN DENG

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## EDUCATION

<b>Australian National University, Australia</b> Doctor of Philosophy in Computer Science	<i>Jul 2019 - Jan 2023</i>
<b>University of Chinese Academy of Sciences, China</b> Master of Science in Computer Science	<i>Sep 2016 - Jun 2019</i>
<b>Beijing Jiaotong University, China</b> Bachelor of Engineering	<i>Sep 2012 - Jun 2016</i>

## EMPLOYMENT HISTORY

<b>Australian National University, Australia</b> Research Fellow (Level B) on 3D Modeling & Generation Collaborating with RIOS Intelligent Machines, Inc. Advisor: Prof. Stephen Gould	<i>Jan 2023 - Now</i>
<b>NEC Laboratories America, INC.</b> Research Intern (Remote) on Multi-task Learning Hosted by Dr. Yumin Suh	<i>Jun 2020 - Sep 2020</i>

## RESEARCH INTERESTS

**3D Modeling & Generation:** Leveraging neural rendering, differentiable optimization, and foundation models for realistic 3D modeling and generation.

**Predicting Model Generalization:** Designing innovative approaches to evaluate and predict the performance of machine learning models on unlabeled test sets.

**Monitoring Model Reliability:** Assessing model resilience to distribution shifts, variations in visual factors, and jailbreak inputs.

## PUBLICATIONS

*Summary.* Published 27 papers in top computer vision and machine learning venues such as CVPR ( $\times 5$ ), ICCV ( $\times 5$ ), ICML ( $\times 4$ ), NeurIPS ( $\times 3$ ), and TPAMI ( $\times 2$ ). Google Scholar Citations = 3,100.

### 3D Modeling & Generation

- [1] **Weijian Deng**, Dylan Campbell, Chunyi Sun, Jiahao Zhang, Shubham Kanitkar, Matthew Shaffer, and Stephen Gould. “*Pos3R: 6D Pose Estimation for Unseen Objects Made Easy.*” In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**). 2025
- [2] **Weijian Deng**, Dylan Campbell, Chunyi Sun, Shubham Kanitkar, Matthew Shaffer, and Stephen Gould. “*Differentiable Neural Surface Refinement for Transparent Objects.*” In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2024
- [3] **Weijian Deng**, Dylan Campbell, Chunyi Sun, Shubham Kanitkar, Matthew Shaffer, and Stephen Gould. “*Ray Deformation Networks for Novel View Synthesis of Refractive Objects.*” In Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (**WACV**), 2024.
- [4] Chunyi Sun, Junlin Han, **Weijian Deng**, Xinlong Wang, Zishan Qin, Stephen Gould. “*3D-GPT: Procedural 3D Modeling with Large Language Models.*” International Conference on 3D Vision (**3DV**), 2025.
- [5] Chunyi Sun, Junlin Han, Runjia Li, **Weijian Deng**, Dylan Campbell, Stephen Gould. “*Unsupervised Decomposition of 3D Shapes into Expressive and Editable Extruded Profile Primitives.*” ACM Special Interest Group on Computer Graphics and Interactive Techniques (**SIGGRAPH**), 2025.
- [6] Ziyi Dong, Chengxing Zhou, **Weijian Deng**, Pengxu Wei, Xiangyang Ji, and Liang Lin. “*Can We Achieve Efficient Diffusion without Self-Attention? Distilling Self-Attention into Convolutions.*” In Proceedings of the IEEE/CVF International Conference on Computer Vision (**ICCV**), 2025

[7] Jiahao Zhang, Anoop Cherian, Cristian Rodriguez, **Weijian Deng**, Stephen Gould. “*Manual-PA: Learning 3D Part Assembly from Instruction Diagrams.*” In Proceedings of the IEEE/CVF International Conference on Computer Vision (**ICCV**), 2025

### Predicting Model Generalization

[8] **Weijian Deng**, Yumin Suh, Stephen Gould, and Liang Zheng. “*Confidence and Dispersity Speak: Characterizing Prediction Matrix for Unsupervised Accuracy Estimation.*” In International Conference on Machine Learning (**ICML**), 2023.

[9] **Weijian Deng**, and Liang Zheng. “*AutoEval: Are Labels Always Necessary for Classifier Accuracy Evaluation?*” IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 2021.

[10] **Weijian Deng**, and Liang Zheng. “*Are Labels Always Necessary for Classifier Accuracy Evaluation?*” In IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2021.

[11] **Weijian Deng**, Stephen Gould, and Liang Zheng. “*What Does Rotation Prediction Tell Us About Classifier Accuracy Under Varying Testing Environments?*” In International Conference on Machine Learning (**ICML**), 2021.

[12] Weijie Tu, **Weijian Deng**, Tom Gedeon, and Liang Zheng. “*A Bag-of-Prototypes Representation for Dataset-Level Applications.*” In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**), 2023.

[13] Renchunzi Xie, Ambroise Odonnat, Vasilii Feofanov, **Weijian Deng**, Jianfeng Zhang, Bo An. “*MANO: Exploiting Matrix Norm for Unsupervised Accuracy Estimation Under Distribution Shifts.*” Advances in Neural Information Processing Systems (**NeurIPS**), 2024

[14] Weijie Tu, **Weijian Deng**, Dylan Campbell, Yu Yao, Jiyang Zheng, Tom Gedeon, Tongliang Liu. “*Ranked from Within: Ranking Large Multimodal Models for Visual Question Answering Without Labels*” In International Conference on Machine Learning (**ICML**), 2025

### Monitoring Model Reliability

[15] **Weijian Deng**, Stephen Gould, and Liang Zheng. “*On the Strong Correlation Between Model Invariance and Generalization.*” Advances in Neural Information Processing Systems (**NeurIPS**), 2022.

[16] Weijie Tu, **Weijian Deng**, Dylan Campbell, Stephen Gould, Tom Gedeon. “*An Empirical Study Into What Matters for Calibrating Vision-Language Models.*” In International Conference on Machine Learning (**ICML**), 2024.

[17] Weijie Tu, **Weijian Deng**, Tom Gedeon, Liang Zheng. “*What Does Softmax Probability Tell Us about Classifiers Ranking Across Diverse Test Conditions?*” In Transactions on Machine Learning Research (**TMLR**) 2024.

[18] Yuli Zou\*, **Weijian Deng**\*, and Liang Zheng. “*Adaptive Calibrator Ensemble: Navigating Test Set Difficulty in Out-of-Distribution Scenarios.*” In Proceedings of the IEEE/CVF International Conference on Computer Vision (**ICCV**), 2023 (\*Equal Contribution)

[19] Weijie Tu, **Weijian Deng**, and Tom Gedeon. “*A Closer Look at the Robustness of Contrastive Language-Image Pre-training (CLIP).*” Advances in Neural Information Processing Systems (**NeurIPS**), 2023

[20] Weijie Tu, **Weijian Deng**, and Tom Gedeon. “*Toward a Holistic Evaluation of Robustness in CLIP Models*”. IEEE **TPAMI**, 2025 (Corresponding Author)

### Enhancing Visual Recognition

[21] **Weijian Deng**, Liang Zheng, Qixiang Ye, Guoliang Kang, Yi Yang, and Jianbin Jiao. “*Image-Image Domain Adaptation With Preserved Self-Similarity and Domain-Dissimilarity for Person Re-Identification.*” In IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2018

[22] **Weijian Deng**, Joshua Marsh, Stephen Gould, and Liang Zheng. “*Fine-Grained Classification via Categorical Memory Networks.*” IEEE Transactions on Image Processing (**TIP**), 2022.

[23] **Weijian Deng**, Liang Zheng, Yifan Sun, and Jianbin Jiao. “*Rethinking Triplet Loss for Domain Adaptation.*” IEEE Transactions on Circuits and Systems for Video Technology (**TCSVT**), 2020.

[24] **Weijian Deng**, Yumin Suh, Xiang Yu, Masoud Faraki, Liang Zheng, and Manmohan Chandraker. “*Split to Learn: Gradient Split for Multi-Task Human Image Analysis.*” In Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (**WACV**), 2023.

- [25] Peng Ding, Ye Zhang, **Weijian Deng**, Ping Jia, and Arjan Kuijper. “A Light and Faster Regional Convolutional Neural Network for Object Detection in Optical Remote Sensing Images.” ISPRS Journal of Photogrammetry and Remote Sensing (**P&RS**) 2018.
- [26] Xiaoxiao Sun, Yunzhong Hou, **Weijian Deng**, Hongdong Li, and Liang Zheng. “Ranking Models in Unlabeled New Environments.” In Proceedings of the IEEE/CVF International Conference on Computer Vision (**ICCV**), 2021.
- [27] Yifan Sun, Liang Zheng, **Weijian Deng**, and Shengjin Wang. “SVDNet for Pedestrian Retrieval.” In Proceedings of the IEEE International Conference on Computer Vision (**ICCV**), 2017.

## AWARDS

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2025	CVPR 2025 Outstanding Reviewer
2024	NeurIPS 2024 Top Reviewer
2024	Outstanding Area Chair, ACM MM
2023	NeurIPS 2023 Top Reviewer
2022	ICML Top 10% Reviewer
2020	ECCV 2020 Outstanding Reviewer
2019	The Third Place in Vehicle Re-identification track AI-City Challenge
2019-2023	Australian Government Research Training Program (AGRTP) Scholarship

## REFEREES

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Prof. Stephen Gould, The Australian National University, Stephen.Gould@anu.edu.au  
 Prof. Tom Gedeon, Curtin University, tom.gedeon@anu.edu.au  
 Prof. Liang Zheng, The Australian National University, liang.zheng@anu.edu.au  
 Prof. Dylan Campbell, The Australian National University, dylan.campbell@anu.edu.au  
 Dr. Yumin Suh, Atmanity, ysuh@atmanity.io

## PROFESSIONAL SERVICE

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<b>Action Editor</b>	Transactions on Machine Learning Research
<b>Tutorial Chair</b>	Evaluating Models Beyond the Textbook <a href="#">[Link]</a> , CVPR 2022
<b>Workshop Chair</b>	4-th Visual Domain Adaptation Challenge <a href="#">[Link]</a> , ECCV 2020
<b>Area Chair</b>	ACM MM 2024, 2025
<b>Journal Reviewer</b>	TPAMI, IJCV, TIP, TMM, TCSVT
<b>Conference Reviewer</b>	CVPR, ICCV, ECCV, NeurIPS, ICML, ICLR
<b>Convenor</b>	ANU Computer Vision Reading Group, 2024

## TEACHING RECORD

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<b>Guest Lecturer at ANU</b> <i>Multi-View Reconstruction; 3D Foundation Model</i> , 2 lectures - Introduced Structure From Motion. - Introduced Neural Radiance Fields and DUS3R.	Mar 2024
<b>Lecturer at SDUW</b> <i>Introduction to Computer Science</i> , Joint ANU-SDUW Program, 24 lectures - Designed course content and prepared lecture materials. - Assessed student performance through exams and projects.	Nov - Dec 2023
<b>Guest Lecturer at ANU</b> <i>Singular Value Decomposition (SVD)</i> , 2 lectures - Introduced Singular Value Decomposition. - Illustrate the practical use of SVD in object retrieval	2019

## GRANTS & FUNDS

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2024-2025	Academic Research Grant, PaliGemma Academic Program (10,000USD)
2024-2025	Academic Research Grant, Google Cloud Research Credits Program (5,000USD)
2024	ANU Early-Career Travel Fund (3,000AUD)
2024	ANU-SDUW Teaching Fellowship (5,000AUD)
2024	ICML Early-Career Travel Fund (3,000EUR)
2022	NeurIPS 2022 Scholar Award (4,000USD)