

Zheyuan (David) Liu

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Education

Doctor of Philosophy, Computer Science

Australian National University

Canberra, Australia

Mar 2019–Feb 2024

- Research surrounds composed image retrieval, broadly in the field of vision-and-language, multi-modal learning.
Supervised by Prof. Stephen Gould.
- Experienced in vision-and-language pre-trained networks, semantic segmentation and and weakly-supervised learning.
- Experienced in fine-tuning large language models, diffusion-based text-to-image generation, and language-guided image editing.

Bachelor of Engineering Hons (Research & Development)

Australian National University, First Class Honours

Canberra, Australia

Feb 2015–Dec 2018

- Majoring in Electronics and Communication Systems, Minorng in Mechatronics Systems.

Selected Research Projects

Click to visit [my Google Scholar profile](#) with a comprehensive and up-to-date publication record.

Candidate set re-ranking for composed image retrieval with dual multi-modal encoder.

Transactions on Machine Learning Research (TMLR)

2024

- **Z Liu**, W Sun, D Teney, S Gould. Available at [arXiv:2305.16304](#).

Bi-directional training for composed image retrieval via text prompt learning.

IEEE Winter Conference on Applications of Computer Vision (WACV)

2024

- **Z Liu**, W Sun, Y Hong, D Teney, S Gould. Available at [arXiv:2303.16604](#).

Image retrieval on real life images with pre-trained vision-and-language models.

IEEE International Conference on Computer Vision (ICCV)

2021

- **Z Liu**, C Rodriguez-Opazo, D Teney, S Gould. Available at [arXiv:2108.04024](#).

Learning Audio-Visual Source Localization via False Negative Aware Contrastive Learning.

IEEE Computer Vision and Pattern Recognition (CVPR)

2023

- W Sun, J Zhang, J Wang, **Z Liu**, et al. Available at [arXiv:2303.11302](#).
- Contribute to the work in ideas and writing.

All-pairs Consistency Learning for Weakly Supervised Semantic Segmentation.

*IEEE International Conference on Computer Vision (ICCV),
Workshop on New Ideas in Vision Transformers*

2023

- W Sun, Y Zhang, Z Qin, **Z Liu**, et al. Available at [arXiv:2308.04321](#).
- Contribute to the work in ideas, coding and writing.

Other Academic Activities

Served as reviewers for

- Computer Vision and Pattern Recognition (CVPR)
- European Conference on Computer Vision (ECCV)
- ACM Multimedia (ACM MM)
- IEEE Transactions on Multimedia (TMM)

Work Experience

**Teaching assistant, Advanced Topics in Machine Learning
(Casual position)** **Canberra, Australia**

Australian National University

2020–2022

- Graduate-level course offered in the second semesters (in 2020, 2021, and 2022).
- Topics include convex analysis, statistical machine learning and deep learning.
- Course convenor: Prof Stephen Gould.

**Teaching assistant, Digital Systems and Microprocessors
(Casual position)** **Canberra, Australia**

Australian National University

2018

- Undergraduate-level course offered in the first semester (in 2018).
- Topics include FPGA and ARM architecture.
- Course convenor: Dr Jonghyuk Kim.

**Research internship
(Summer internship program, during the Year 3 & 4 break
in undergraduate)** **Sydney, Australia**

*Commonwealth Scientific and Industrial Research Organisation
(CSIRO)'s Data61*

Nov 2017–Feb 2018

- Traffic incident analysis and multilevel traffic scenario simulation with Aimsun.
- Follow-up project on XgBoost incident duration prediction published at the ITS World Congress 2019 [here](#).
- Supervised by Dr Adriana-Simona Mihaita.

Skills

Experienced in

- Python coding.
- Deep learning frameworks and tools (PyTorch and PyTorch-Lightning, Caffe, and Docker environment).
- Machine learning libraries and tools (scikit-learn, XgBoost).
- Deep learning dataset collection through Amazon Mechanical Turk.

Other skills

- **Programming Languages** Python, Matlab, Verilog and \LaTeX .
- **Web development** Bootstrap, Django. Actively maintaining a [dataset benchmark server](#).
- Can work alone or in a team. Excellent communication skills.

Languages

- **Mandarin Chinese** native.
- **English** Fluent.