# CHENG-YOU LU

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Personal Webpage | GitHub

## Education

**University of Technology Sydney, Advisor: Chin-Teng Lin** — NSW, Australia
Ph.D in Computer Science — Oct 2023 — Mar 2027

**Brown University, Advisor: Srinath Sridhar** — Rhode Island, USA
M.S. in Computer Science | GPA: 4.0/4.0 — Aug 2021 — May 2023
- Relevant Coursework: Advanced Topics in Deep Learning, Deep Learning, Computer Vision, Intro to Computer Graphic

**National Chiao Tung University (NCTU), Advisor: Wen-Hsiao Peng** — Hsinchu, Taiwan
B.S. in Computer Science | GPA: 3.96/4.3 — Sept 2015 — June 2019
- Relevant Courses: Intro to Pattern Recognition, Intro to Machine Learning, Deep Learning & Practice

**Shanghai Jiao Tong University (SJTU), Exchange Student** — Shanghai, China
B.S. in Computer Science | GPA: A- — Sept 2017 — Jan 2018
- Relevant Courses: Cloud Computing, Thinking and Approach of Programming

## Publications

[P1] C. Y. Lu, Y. S. Hung, W. L. Chi, H. P. Wang, C. L. T. Tsai, Y. C. Chang, Y. L. Liu, T. Do, C. T. Lin, "DF3DV-1K: A Large-Scale Dataset and Benchmark for Distractor-Free Novel View Synthesis," **ECCV**, Sep 2026

[P2] C. Y. Lu, Z. Zhuang, T. Le, D. Xiao, Y. C. Chang, T. Do, S. Sridhar, C. T. Lin, "Hestia: Voxel-Face-Aware Hierarchical Next-Best-View Acquisition for Efficient 3D Reconstruction," **IEEE WACV**, Mar 2026

[P3] J. Yang, C. Y. Lu, Z. Wang, H. T. Chen, G. K. Xu, C. L. Zhang, S. T. Dong, X. Y. Liang, B. B. Jiang, "Multi-View Clustering with Granularity-Aware Pseudo Supervision," **AAAI**, Jan 2026

[P4] A. Dey, C. Y. Lu, A. I. Comport, S. Sridhar, C. T. Lin, J. Martinet, "HFGaussian: Learning Generalizable Gaussian Human with Integrated Human Features," **IEEE Transactions on Artificial Intelligence**, Dec 2025

[P5] Z. Zhuang, C. Y. Lu, Y. C. F. Chang, Y. K. Wang, T. Do, C. T. Lin, "AEGIS: Human Attention-based Explainable Guidance for Intelligent Vehicle Systems," **ACM CHI**, May 2025

[P6] C. Y. Lu, P. Zhou, A. Xing, C. P. C. Pokhariya1, A. Dey, I. N. Shah, R. Mavidipalli, D. Hu, A. I. Comport, K. Chen, S. Sridhar, "DiVa-360: The Dynamic Visual Dataset for Immersive Neural Fields," **IEEE CVPR Highlight**, June 2024

[P7] T. Houchens[1], C. Y. Lu[1], S. Duggal, R. Fu, S. Sridhar, "NeuralODF: Learning Omnidirectional Distance Fields for 3D Shape Representation," **Technical Report**, June 2022

[P8] S. Y. Pan[1], C. Y. Lu[1], S. P. Lee, and W. H. Peng, "Weakly-Supervised Image Semantic Segmentation Using Graph Convolutional Networks," **IEEE ICME**, July 2021

[P9] Y. C. Huang, Y. H. Chen, C. Y. Lu, H. P. Wang, W. H. Peng, and C. C. Huang, "Video Rescaling Networks with Joint Optimization Strategies for Downscaling and Upscaling," **IEEE CVPR**, June 2021

## Research Experience

**Computational Intelligence and Brain-Computer Interface Lab** — NSW, Australia
PhD Candidate, Advisor Chin-Teng Lin, External Advisor Yu-Lun Liu — Oct 2023 – Mar 2027

***DF3DV-1K: A Large-Scale Dataset and Benchmark for Distractor-Free Novel View Synthesis***
- Proposed DF3DV-1K, a large-scale real-world dataset and benchmark for distractor-free novel view synthesis, comprising 1,048 scenes with clean and cluttered images spanning diverse distractor types and scene themes.
- Benchmarked recent distractor-free radiance field methods on DF3DV-1K and demonstrated DI$^2$FIX, a diffusion-based enhancement module that consistently improves rendering quality across multiple radiance field methods.

***Hestia: Voxel-Face-Aware Hierarchical Next-Best-View Acquisition for Efficient 3D Reconstruction***
- Proposed Hestia, a generalizable RL-based next-best-view planner that treats voxels as cubes rather than points to avoid geometry overlooking.
- Introduced a hierarchical action structure for managing high-dimensional continuous viewpoint prediction, a larger and more diverse training set for improved robustness, and a close-greedy strategy to mitigate spurious correlations.

***Multi-View Clustering with Granularity-Aware Pseudo Supervision***

[1]indicates equal contribution

- Proposed a granularity-aware pseudo-supervision framework that generates hierarchical pseudo-labels and selects reliable views for robust multi-view clustering.

***AEGIS: Human Attention-based Explainable Guidance for Intelligent Vehicle Systems***
- Proposed AEGIS, a human attention-based explainable guidance for intelligent vehicle systems, which leverages a pretrained human attention model to identify critical regions of interest for decision-making.
- Proposed a human attention dataset, collecting 1.2 million frames from 20 participants across six scenarios.

***HFGaussian: Learning Generalizable Gaussian Human with Integrated Human Features***
- Proposed a generalizable 3D Gaussian Splatting that can estimate novel views and human features, including the 3D skeleton, 3D keypoints, and dense pose, from sparse input images in real time.

**Brown Interactive 3D Vision & Learning Lab** — Rhode Island, USA
Research Assistant, Advisor Srinath Sridhar — June 2023 – June 2024

***DiVa-360: The Dynamic Visual Dataset for Immersive Neural Fields***
- Proposed DiVa-360, a real-world 360° dynamic visual dataset that contains synchronized high-resolution and long-duration multi-view video sequences of table-scale scenes captured using a customized low-cost system with 53 cameras.
- Evaluated and analyzed existing dynamic novel view synthesis methods on the proposed dataset and found that existing methods are biased toward motions.

***NeuralODF: Learning Omnidirectional Distance Fields for 3D Shape Representation***
- Proposed ODFs, a 3D shape representation that can be transformed to and from various 3D representations and approximated ODFs through neural network.

**NCTU Multimedia Architecture and Processing Lab** — Hsinchu, Taiwan
Research Assistant, Advisor: Wen-Hsiao Peng — Jan 2021 – Mar 2021

***Weakly-Supervised Image Semantic Segmentation Using Graph Convolutional Networks***
- Introduced a feature propagation framework built on Graph Neural Network to the affinity network.

***Video Rescaling Networks with Joint Optimization Strategies for Downscaling and Upscaling***
- Implemented joint optimization methods built on invertible neural networks and designed a center loss to mitigate the quality fluctuation in the reconstructed video.

**University of Washington-NCTU Artificial Intelligence Lab** — Hsinchu, Taiwan
Research Assistant, Advisor: Jenq-Neng Hwang, Wen-Hsiao Peng — Sept 2020 – Dec 2020

***Wafer Defect Inspection***
- Adopted an unsupervised domain adaptation method to classify wafers according to its defects.

## Work Experience

**TuSimple** — California, USA
Perception Research Engineer Intern, Camera Group — May 2022 – Aug 2022

***Transformer model for semantic segmentation***
- Applied Transformer with semi-supervised learning and contrastive learning and improved the performance of the motorcycle category by 20% mIoU.
- Augmented dataset through the pseudo labels from Transformers and improved the performance of the baseline by 3% mIoU.

## Services

- Reviewer of CVPR24,25, ICLR25, ICCV25, CoRL25, NeurIPS24,25, AAAI24, ICRA RoboNerF24, ECCV26, TPAMI, and Transactions on Artificial Intelligence

## Awards & Honors

- 2024 Taiwan government scholarship to study abroad
- 2018 Ministry of Science and Technology's College Student Research Program
- 2016 Certificate of Appreciation for Vice Teaching Assistant from Dean of Computer Science Department

## Language and Skills

**Programing Languages:** Python, C, C++, MATLAB, SQL
**Tools:** IsaacLab, Webots, SB3, Tensorflow, Pytorch, Scikit-Learn, Keras, MMCV, MMSegmentation, Linux
**Language:** Mandarin (native), English (fluent)