Zhi-Yi Chin

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EDUCATION

National Yang Ming Chiao Tung University (NYCU)   *Feb. 2021 - Sep. 2023*

MSc IN COMPUTER SCIENCE AND ENGINEERING

- **GPA:** **4.25/4.3**
- Enriched Vision Applications Lab (EVA), Advisor: Dr. Wei-Chen Chiu
- **Selected Courses:** Deep Learning and Practice (**A+**), Reinforcement Learning (**A+**), Selected Topics in Visual Recognition using Deep Learning (**A+**), Computer Vision (**A+**)

National Chung Cheng University (CCU)   *Sep. 2017 - Jan. 2021*

B.S. IN COMPUTER SCIENCE AND INFORMATION ENGINEERING

- **GPA:** Overall: **4.18/4.3**, Major: **4.21/4.3**, Ranking: **1/43**
- Machine Vision and Learning Lab (MVL), Advisor: Dr. Chen-Kuo Chiang
- **Honors:** Presidential Honor Award * 6 (F'17, S'18, F'18, S'19, F'19, S'20), College Student Research Scholarship
- **Selected Courses**: Machine Learning (**A+**), Statistics (**A+**), Object-Oriented Programming (**A+**), Data Structure (**A+**), Automatic Car Based on Learning Algorithm (**A+**), Compiler Design (**A+**)

RESEARCH EXPERIENCES

Enriched Vision Application Lab, NYCU, *Advisor: Prof. Wei-Chen Chiu & Dr. Pin-Yu Chen*   *Aug. 2021 - CURRENT*

RESEARCH ASSISTANT

- Researching on Red-teaming tool for safe T2I model developer. *[ICML'24]*
- Researching on MLLM video summarization. *[Preprint]*
- Researched on saliency-guided masking as a novel data augmentation for contrastive-based vision SSL. *[WACV'24]*
- Researched on point cloud augmentation for non-color datasets. *[🐙 code]*

Machine Vision and Learning Lab, CCU, *Advisor: Dr. Chen-Kuo Chiang*   *Mar. 2020 - Jan. 2021*

UNDERGRADUATE RESEARCHER

- Researched on multi-target multi-camera vehicle tracking system. *[CVPRW'21]*
- Researched on applications for 6DoF robotic arms in calligraphy.

SELECTED PUBLICATIONS († indicates equal contribution)

[1] **Zhi-Yi Chin**[†], Chieh-Ming Jiang[†], Pin-Yu Chen, Ching-Chun Huang, Wei-Chen Chiu "Prompting4Debugging: Red-Teaming Text-to-Image Diffusion Models by Finding Problematic Prompts" *In Proceedings of the International Conference on Machine Learning (ICML) 2024.* [🌐 project] [🐙 code]

[2] Kuan-Chen Mu, **Zhi-Yi Chin**, Wei-Chen Chiu "Realizing Video Summarization from the Path of Language-based Semantic Understanding" *In Submission*

[3] **Zhi-Yi Chin**[†], Chieh-Ming Jiang[†], Pin-Yu Chen, Ching-Chun Huang, Wei-Chen Chiu "Masking Improves Contrastive Self-Supervised Learning for ConvNets, and Saliency Tells You Where" *In Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2024.* [🐙 code]

[4] Yun-Lun Li, **Zhi-Yi Chin**, Ming-Ching Chang, Chen-Kuo Chiang "Multi-Camera Tracking by Candidate Intersection Ratio Tracklet Matching" *In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops 2021.*

PROJECTS

3D Point Cloud Augmentation via SRN   *Jan. 2022*

MEDIATEK RESEARCH PROJECT *[🐙 code] [📊 slides]*

- Design a 3D point cloud augmentation based on a novel view synthesis method, scene representation networks, and use PointNet to evaluate our augmented point clouds quality.
- Replace instance object id with image features from ResNet to apply our method on unseen objects and do interpolation later on.
- Proposed method is successful in ModelNet10 and generates the augmented data by intra-class interpolation with ShapeNet in the latent space of SRN encoder.
- Observe limitation of novel view synthesis method on non-textured data.

Reimplementation Challenge

Jul. 2021

REINFORCEMENT LEARNING *[🎧 code] [📄 report] [📊 slides]*

- Reimplement ICLR 2018 paper: MAXIMUM A POSTERIORI POLICY OPTIMISATION in Pytorch.
- Successfully replicate the results in Cartpole, Hopper and Acrobot in MuJoCo environment.

Generative Models as Data Augmentation

Sep. 2021

DEEP LEARNING AND PRACTICE *[🎧 code] [📊 slides] [▶ video]*

- Investigate image transformation by exploring walks in the latent space of GAN.
- Use GAN steerability as an data augmentation technique.
- Conclude that GAN steerability is a better data augmentation technique compare to transformation done in the data space.

RSNA Pneumonia Detection

Jan. 2022

VISUAL RECOGNITION USING DEEP LEARNING *[🎧 code] [📄 report] [📊 slides]*

- Design a two stage method, which first use a classification model to classify pneumonia, then use a detection model to locate the disease.
- Get the best results when using EfficientNet as classification model with 0.2 classification probability threshold when testing, and YOLOR as detection model. This method can reduce false positive results.
- Boost the final accuracy 2% by resizing the predicted bounding box to 87.5% of the original size.

Calendar Helper, Google

Aug. 2019

SOFTWARE PRODUCT SPRINT DEVELOPER *[🎧 code]*

- A multifunctional Webapp for to-do lists and calendars.
- Using Javascript and JQuery as front-end and Java as back-end and host the Webapp on Google cloud console.
- Highlights: tagging system, nice dashboard design, synchronize with Google Calendar.

HONORS & AWARDS

Presidential Honor Award - top 4% students (6 times), CSIE Dept. at CCU

Fall '17, Spring '18, Fall '18, Spring '19, Fall '19, Spring '20

College Student Research Scholarship, Ministry of Science and Technology, Taiwan

2020

Google Student Travel Scholarship, Grace Hopper Celebration

Oct. 2019