

Tai-Yu (Daniel) Pan

Email: tydpan@gmail.com

[Website](#) ♦ [Google Scholar](#) ♦ [LinkedIn](#)

SUMMARY

My research focuses on **Large-Scale Computer Vision** and **Machine Learning**, including:

- **2D/3D Detection, Segmentation, Generation:** [ICCV'21](#), [NIPS'21](#), [ECCV'22](#), [CVPR'23](#), [ICLR'24](#), [\[C8\]](#), [\[C9\]](#)
- **Imbalanced, Long-Tailed Learning:** [ICCV'21](#), [NIPS'21](#), [ECCV'22](#)
- **Representation Learning:** [ICCV'21](#), [CVPR'23](#), [ICLR'24](#)
- **Multi-Modal, Multi-Agent, Robotic (Ego-Centric) Perception:** [CVPR'22](#), [ICLR'24](#), [\[C8\]](#), [\[C9\]](#)
- **Autonomous Driving:** [ICLR'24](#), [\[C8\]](#), [\[C9\]](#)
- **Medical Imaging:** [\[C1\]](#), [\[J1\]](#)

RESEARCH & EMPLOYMENT

[Meta](#)

Research Scientist Intern, GenAI

May 2023 – Aug. 2023

Bellevue, WA

- Researched efficient training of large vision and language models (VLM)

[Adobe](#)

Research Intern

May 2022 – Dec. 2022

Columbus, OH

- Researched open-world part segmentation
- Published in CVPR'23, applied patent for the developed algorithm

[Buckeye AutoDrive](#), The Ohio State University

Aug. 2020 – Present

Team Lead

Columbus, OH

- Developed 2D/3D perception algorithms, pipeline & message with Robot Operating System (ROS)
- Managed and mentored 50+ undergraduate & graduate students
- Designed tutorials and workshops (topics: general programming, image processing, object detection, machine learning, and deep learning, 3D point cloud, etc.)
- Won 2nd place in nationwide collegiate SAE AutoDrive Challenge II (held by General Motors)

[Computer Science and Engineering](#), The Ohio State University

Aug. 2018 – Present

Graduate Research Assistant

Columbus, OH

- Developing sensory (LiDAR) simulation with generation techniques
- Developed a new learning scenario for collaborative autonomous driving
- Developed a pre-training algorithm that saves 80% of annotation effort for 3D detection
- Improved object detection on large-scale long-tailed dataset
- Improved vision and language model for multi-modal navigation task
- Built 3D detection models for lung nodule detection (medical imaging)
- Built 2D detection models for the detection and segmentation of pancreas neoplasia (medical imaging)

EDUCATION

[The Ohio State University \(OSU\)](#), Columbus, OH

Sep. 2018 – **Nov. 2024**

Ph.D. and M.S. in Computer Science and Engineering, advised by [Wei-Lun \(Harry\) Chao](#)

[University of Washington \(UW\)](#), Seattle, WA

Sep. 2016 – Jun. 2018

M.S. in Chemical Engineering / Data Science, advised by Jim Pfaendtner

[National Taiwan University \(NTU\)](#), Taipei, Taiwan

Sep. 2010 – Jun. 2014

B.S. in Chemical Engineering

HONORS

- Graduate Student Research Award at OSU
- Invited talk to workshop in ICCV'21

PUBLICATIONS

Conferences

- [C9] Perceptual Perspective Transfer: Controllable 3D Generation for Multi-Agent via Diffusion
Tai-Yu Pan, Sooyoung Jeon, Mengdi Fan, Yihong Sun, Katie Z Luo, Mark Campbell, Kilian Q Weinberger, Bharath Hariharan, Wei-Lun Chao
Under submission.
- [C8] Learning 3D Perception from Others' Predictions
Jinsu Yoo, Zhenyang Feng, **Tai-Yu Pan**, Yihong Sun, Cheng Perng Phoo, Xiangyu Chen, Mark Campbell, Kilian Q Weinberger, Bharath Hariharan, Wei-Lun Chao
Under submission.
- [C7] Pre-Training LiDAR-Based 3D Object Detectors Through Colorization
Tai-Yu Pan, Chenyang Ma, Tianle Chen, Cheng Perng Phoo, Katie Z Luo, Yurong You, Mark Campbell, Kilian Q Weinberger, Bharath Hariharan, Wei-Lun Chao
International Conference on Learning Representations (ICLR), 2024.
- [C6] Towards Open-World Segmentation of Parts
Tai-Yu Pan, Qing Liu, Wei-Lun Chao, Brian L. Price
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2023.
- [C5] Learning with Free Object Segments for Long-Tailed Instance Segmentation
Cheng Zhang*, **Tai-Yu Pan***, Tianle chen, Jike Zhong, Wenjin Fu, Wei-Lun Chao
European Conference on Computer Vision (ECCV), 2022.
- [C4] One Step at a Time: Long-Horizon Vision-and-Language Navigation with Milestones
Chan Hee Song, Jihyung Kil, **Tai-Yu Pan**, Brian Sadler, Wei-Lun Chao, Yu Su
IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2022.
- [C3] On Model Calibration for Long-Tailed Object Detection and Instance Segmentation
Tai-Yu Pan*, Cheng Zhang*, Yandong Li, Hexiang Hu, Dong Xuan, Soravit Changpinyo, Boqing Gong, Wei-Lun Chao
Conference on Neural Information Processing Systems (NeurIPS), 2021.
- [C2] MosaicOS: A Simple and Effective Use of Object-Centric Images for Long-Tailed Object Detection
Cheng Zhang*, **Tai-Yu Pan***, Yandong Li, Hexiang Hu, Dong Xuan, Soravit Changpinyo, Boqing Gong, Wei-Lun Chao
IEEE/CVF International Conference on Computer Vision (ICCV), 2021.
Invited research talk at LVIS Challenge 2021 in ICCV 2021.
- [C1] Computer-aided detection of advanced neoplasia in intraductal papillary mucinous neoplasms using confocal laser endomicroscopy
Somashekar G Krishna, Wei-Lun Chao, Sarah Poland, Victoria Alexander, Tassiana Maloof, Kelly Dubay, Olivia Ueltschi, Dana M Middendorf, Muhammed O Jajeh, Aadit Vishwanath, Kyle Porter, David Carlyn, **Tai-Yu Pan**, Georgios Papachristou, Phil A Hart, Zobeida Cruz-Monserrate, Darwin L Conwell
GASTROENTEROLOGY. Vol. 158. No. 6.

Journals

- [J1] High Performance in Risk Stratification of Intraductal Papillary Mucinous Neoplasms by Confocal Laser Endomicroscopy Image Analysis with Convolutional Neural Networks
Jorge D. Machicado, Wei-Lun Chao, David E. Carlyn, **Tai-Yu Pan**, Sarah Poland, Victoria L. Alexander, Tassiana G. Maloof³, Kelly Dubay, Olivia Ueltschi, Dana M. Middendorf, Muhammed O. Jajeh, Aadit B. Vishwanath, Kyle Porter, Phil A. Hart, Georgios I. Papachristou, Zobeida Cruz-Monserrate, Darwin L. Conwell, Somashekar G. Krishna
Gastrointestinal Endoscopy

MENTORSHIP & TEACHING

Instructor, The Ohio State University	Summer of 2019 & 2020
• CSE 1222 Computer Programming in C++ for Engineers and Scientists	
Graduate Teaching Assistant, The Ohio State University	Sep. 2018 – Aug. 2020
• CSE 5523 Machine Learning and Statistical Pattern Recognition	
• CSE 1222 Computer Programming in C++ for Engineers and Scientists	

ACADEMIC SERVICE

Reviewer: CVPR 2024/2023/2022, ICLR 2024, NeurIPS 2023, ECCV 2024/2022, ICCV 2023, BMVC 2022

SKILLS

- Programming Languages: Python, C++, JavaScript, WebGL, Bash Script, MATLAB, Fortran
- Other Computer Skills: Unix, Linux, PyTorch, ROS, AWS, Docker, AutoCAD
- Languages: Native Mandarin, Fluent English

PROJECTS

Machine Learning Projects, The Ohio State University

- Project Limb Rescue: developed a cloud service and a machine tool helping patients to monitor the risk of lymphedema, with 67% accuracy on simulated test data. [\[link\]](#), [\[link\]](#)
- Emoji Prediction: Naive Bayes and BiLSTM with Character Embedding, detecting one of 20 emoji labels by tweets, leveraging LSTM and BiLSTM model with embedding techniques, with competitive 46.48% accuracy on competition board. [\[link\]](#)

Data Science Projects, University of Washington

- Development of Lignin pyrolysis model with Python, leveraging machine learning techniques such as Artificial Neural Network/Sklearn with 99.2% accuracy. [\[link\]](#)
- Development of open-sourced software package (EASE) leveraging machine learning (Random Forests Classification) and statistical analysis techniques to provide electricity sources and profit profiles based on cost and weather. [\[link\]](#)