

# Tsung-Han (Patrick) Wu

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## Education

- Ph.D. in Computer Science** *Aug. 2023 – Present*  
University of California, Berkeley
- **Advisor:** Prof. Trevor Darrell, Prof. Joseph Gonzalez
  - **Lab Affiliation:** BAIR, Sky Computing Lab
- M.S. in Computer Science** *Sep. 2020 – Jun. 2022*  
National Taiwan University (NTU)
- **GPA:** 4.2/4.3 [Transcript]
  - **Advisor:** Prof. Winston H. Hsu
  - **Lab Affiliation:** Communication and Multimedia Lab (CMLab)
  - **Honors:** 2021 Foxconn Technology Award, 2022 IPPR Outstanding MS Thesis Award
  - **MS Thesis:** Active Learning for Semantic Segmentation: Region Diversity and Dynamic Domain Density
- B.S. in Computer Science** *Sep. 2016 – Jun. 2020*  
National Taiwan University (NTU)
- **GPA:** overall: 4.18/4.3, CS-related: 4.24/4.3, graduate ranking: **6/117 (5%)** [Transcript]
  - **Honors:** Dean's List Award \* 3 (F'16, S'17, F'19)

## Research Interests

- Research on building cost-effective and trustworthy autonomous systems with low-cost sensors or limited labels.
- Specialized in active learning, domain adaptation, adversarial robustness, and depth estimation.

## Research Experience

- Research Assistant** *Aug. 2022 – Jun. 2023*  
Advisor: Prof. Shang-Tse Chen & Winston H. Hsu (NTU)
- Researched on reaching **Fairness and Adversarial Robustness** with limited labeled data. **[ICCVW'23]**
- Graduate Researcher** *Sep. 2020 – Jul. 2022*  
Advisor: Prof. Winston H. Hsu (CMLab, NTU)
- Researched on **Active Learning/Active Domain Adaptation** for **Semantic Segmentation**. **[ICCV'21, ECCV'22]**
  - Researched on **Image-based 3D Object Detection** with depth guidance. **[CVPR'22]**
- Undergraduate Researcher** *Sep. 2018 – Aug. 2020*  
Advisor: Prof. Winston H. Hsu (CMLab, NTU)
- Researched on improving the structure of low-quality depth maps via **Depth Completion**. **[ICCVW'19]**
  - Researched on enhancing **Dense Depth Estimation** with sparse signal guidance. **[CVPR'21]**

## Publications

### Preprints

- [1] YS Liou, **TH Wu**, JF Yeh, WC Chen, WH Hsu. "MuRAL: Multi-Scale Region-based Active Learning for Object Detection".

### Conference Papers

- [2] **TH Wu**, YS Liou, SJ Yuan, HY Lee, TI Chen, KC Huang, WH Hsu. "D2ADA: Dynamic Density-aware Active Domain Adaptation for Semantic Segmentation". **ECCV** 2022.
- [3] **TH Wu**, YC Liu, YK Huang, HY Lee, HT Su, PC Huang, WH Hsu. "ReDAL: Region-based and Diversity-aware Active Learning for Point Cloud Semantic Segmentation". **ICCV** 2021.

- [4] CY Tseng, YR Chen, HY Lee, **TH Wu**, WC Chen, WH Hsu. “CrossDTR: Cross-view and Depth-guided Transformers for 3D Object Detection”. **ICRA** 2023.
- [5] KC Huang, **TH Wu**, HT Su, WH Hsu. “MonoDTR: Monocular 3D Object Detection with Depth-Aware Transformer”. **CVPR** 2022.
- [6] YK Huang, YC Liu, **TH Wu**, HT Su, YC Chang, TL Tsou, YA Wang, WH Hsu. “S3: Learnable Sparse Signal Superdensity for Guided Depth Estimation”. **CVPR** 2021.
- [7] RF Jheng, **TH Wu**, JF Yeh, WH Hsu. “Free-form 3D Scene Inpainting with Dual-stream GAN”. **BMVC** 2022.
- [8] HY Lee, HT Su, BC Tsai, **TH Wu**, JF Yeh, WH Hsu. “Learning Fine-Grained Visual Understanding for Video Question Answering via Decoupling Spatial-Temporal Modeling”. **BMVC** 2022.

## Workshop Papers

- [9] **TH Wu**, HT Su, ST Chen, WH Hsu. “Fair Robust Active Learning by Joint Inconsistency”. **ICCVW** 2023.
- [10] YK Huang\*, **TH Wu\***, YC Liu, WH Hsu. “Indoor Depth Completion with Boundary Consistency and Self-Attention”. **ICCVW** 2019. (\* indicates equal contribution)

## Teaching Experience

### Teaching Assistant

*2019, 2020 Spring*

CS2311: Network Administration and System Administration, NTU

- **Lab Lecturer:** Teach shell script, system partition, file system and Linux kernel. Develop two programming assignments. Won the **Best Teaching Assistant Awards** in the EECS department. (2019 Spring)
- **Head of TAs:** Assist in course syllabus planning and lead the TA team to complete all in-class lab teaching, assignments, and exams. (2020 Spring)

### Teaching Assistant

*2019 Fall*

EE5184: Machine Learning, NTU

- Develop two machine learning programming assignments on the Kaggle platform. Design a set of hand-written homework and several problems in the final exam.

## Work Experience

### Network and System Administrator

*Apr. 2021 – Mar. 2022*

Communication and Multimedia Lab (CMLab), NTU

- Maintain all networking services in the lab, including switches, wireless access points, and a DHCP server.
- Manage 14 GPU servers, web services, and account systems in the lab. Automate data backup and package upgrade with open-source tools.

### System Administrator [\[Certificate Link\]](#)

*Feb. 2018 – Jun. 2020*

Department of Computer Science and Information Engineering (CSIE), NTU

Supervisor: Prof. Hsin-Mu Tsai

- **Head of Mail Services:** Maintain mail servers for all students, and faculties in the department. Automate system deployment with open-source tools. (2018 – 2019)
- **SysAdmin Team Leader:** Lead the team to improve the backup and monitoring services. Plan and execute the data center relocation project of the CS department. (2019 – 2020)

### Data Scientist Intern

*Jul. 2019 – Aug. 2019*

ASUS Inc., AICS Team

- Develop a denoising and rectification toolkit to boost OCR performance on printed paper.
- Implement an object detection model on private datasets.

## Awards and Service

**Conference & Journal Reviewers**, at CVPR, ECCV, ICCV, BMVC, ICMR, TMM

*Apr. 2021 – Present*

**IPPR Outstanding MS Thesis Award** (Top 3 Computer Vision Master Thesis in Taiwan)

*Aug. 2022*

**Foxconn Technology Award** (Top 19 applied students in Taiwan, 250K NTD scholarship)

*Dec. 2021*

**Best Teaching Assistant Awards**, at NTU EECS

*Spring'19*

**Dean's List Award**, at NTU CSIE (For top 5% students); 3x Recipient

*Fall'16, Spring'17, Fall'19*

## **Skills**

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**Languages:** Experienced in C, Python and capable of C++. Fluent in Tensorflow, PyTorch and Scikit-Learn.

**System administration:** Git, Linux, Ansible, QEMU-KVM and Docker.