Chih-Chuan Hsu

Taipei, Taiwan

(+886)963980765 EMAIL LinkedIn Github

Education

National Taiwan University (NTU) **Taipei, Taiwan**

Master of Science in Forestry and Resource Conservation - Forest Mensuration Laboratory *02/2022-06/2024(expected)*

- **Overall GPA:** 4.12/4.3 **Class Rank:** 5/41
- **CS-Related GPA:** 4.06/4.3
- **Selected Coursework:** Computer Vision, Algorithm Design and Analysis, Computer Networks, Operating Systems

National Taiwan University (NTU) **Taipei, Taiwan**

Bachelor of Science in Forestry and Resource Conservation *09/2017-06/2021*

- **Overall GPA:** 3.71/4.3 **Last-60 GPA:** 4.11
- **CS-Related GPA:** 4.05/4.3
- **Award:** Dean's List Award, 2020 Fall
- **Selected Coursework:** Data Structure and Algorithm, Database Management System, Computer Programming (Python), Computer Programming (Java)

Research Experience

Communications and Multimedia Lab, NTU Department of Computer Science **Taipei, Taiwan**

Graduate Research Assistant *07/2023-now*

- Achieved 86% recall rate for predicting patients' positions in the ward to monitor their health conditions in collaboration with NTU Hospital, utilizing YOLOv5 to detect patients in time series data with a sliding window algorithm.
- Retrieved information for sarcopenia prediction for long-term care information system in collaboration with Youhu Platform Co., Ltd., a healthcare company.
- Fine-tuned Large Language Model (Bert-Base-Chinese) to extract features from traditional Chinese patient notes, then trained using contrastive learning with paired text descriptions.

Publications Under Review

A Novel Loosely-Coupled approach using Wi-Fi and IMU for Indoor Localization

Ta-Wei Yang, Jia-Wei Li, Yun-Hao Wang, **Chih-Chuan Hsu**, Chih-Wei Huang, and Cheng-Fu Chou

Submitted to *IEEE Sensors Journal*

Intelligent Reflecting Surface-Assisted Millimeter Wave Communications: Cross-Attention-Aided Variational Autoencoder-Based Precoding Design

Hong-Yunn Chen, Meng-Hsun Wu, Ta-Wei Yang, **Chih-Chuan Hsu**, Chih-Wei Huang, Cheng-Fu Chou

Submitted to *IEEE Transactions on Cognitive Communications and Networking*

A Novel Approach for Adaptive Link Management and Channel Estimation for IRS-assisted Massive MIMO Systems

Meng-Hsun Wu, Hong-Yunn Chen, Ta-Wei Yang, **Chih-Chuan Hsu**, Chih-Wei Huang, and Cheng-Fu Chou

Submitted to *IEEE Communications Letters*

Work Experience

OME Technology **New Taipei, Taiwan**

Part-time Software Engineer *09/2022-04/2023*

- Color Recognition for chemicals in a lite PCR machine by CNN model with pixel-wise preprocessing.
- Built a digital image labeling board on Google Colab in response to the remote work arrangement.
- Achieved 92% of accuracy for object detection of a 96-well PCR plate, using self-designed CNN model with ensembling classifier and edge detection by SIFT in OpenCV.

Computer Vision Summer Intern *06/2022-08/2022*

- Project Leader of Automated Optical Inspection of PCR machine, from data collecting, labeling, model training, and testing in 2.5 months.
- Increased accuracy from 68% to 98% in 37 target blocks in PCR machine by CNN models with dropout on PyTorch.

NTU Department of Forestry and Resource Conservation **Taipei, Taiwan**

Teaching Assistant *02/2022-06/2022, 02/2023-06/2023*

- Graded for the elective course "Forest Mensuration" in the Department of Forestry and Resource Conservation.
- Collaboratively led the hands-on field experiment for forest sampling and tree measurement during the course.

Selected Projects

Front-end Android Application for Forest Survey in NTU Experimental Forest. *07/2023-now*

- Designed forestry survey application for future forest management and achieving single source of truth (SSOT) for database management.
- Implemented front-end user interface by Jetpack Compose and Material Design3 in Kotlin.

Android Application to Replace Traditional Forest Sampling Tool. *10/2022–now*

- Lowered the cost of traditional instruments for Horizontal Point Sampling (HPS) to only 10%.
- Accomplished slope correction for HPS by accelerometer, with Model-View-ViewModel (MVVM) pattern & functional programming in Kotlin.
- Implemented upper-stem diameter measurement, tree height measurement, and borderline factor calculation.

Object Recognition of Pupil Detection for Eye Tracking System. *05/2022–06/2022*

- Segmented the pupil area using a self-designed auto-encoder model with mix-up data augmentation.
- Improved the accuracy from 70% to 89%, especially after Test-Time Augmentation.

Skills

Programming Language

- C++, C, Python, Kotlin, Java, R, JavaScript

Developer Tools

- Android Studio, Linux, Git, Tmux, CMake, Shell Script

Technologies/Frameworks

- PyTorch, HTML, Jetpack, Node.js, Express.js, AzureSQL, MySQL

Languages

- English & Mandarin fluency
- TOEFL Score: 104 (R:26, L:27, S:26, W:25)
- GRE Score: 321 (Q:170, V:151, AW:3.5)

Extracurricular

NTU Men's Basketball Varsity Team **Taiwan**

Captain *06/2019-06/2021*

- Led the team from Division 2 to Division 1, making it the only team in Division 1 in the history of Taiwan without any basketball-specialized student.
- Raised funds exceeding 60% of the budget from the Alumni of NTU Men's Basketball Team.
- Organized the NTU Cup Basketball Tournament, with participation from over 65 teams and more than 500 students.

Assistant Coach *12/2021-02/2022*

- Tactics design and training execution, with a particular focus on zone defense design.