YU-TING CHENG

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EDUCATION

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN (UIUC) *Illinois, USA*
Master of Computer Science *Aug. 2024 – Present*

NATIONAL CHENGCHI UNIVERSITY (NCCU) *Taipei, Taiwan*
Bachelor of Science in Computer Science & Statistics *Sept. 2019 – Feb. 2024*
Minor in Management Information Systems & Japanese **GPA: 3.99/4.00, Ranking: 1/60**

SKILLS

Programming: C, C++, Python, Java, PyTorch, TensorFlow, R, R Studio, SAS, SQL, MIPS, Haskell, LaTex
Language: Native in Mandarin, proficient in English, intermediate in Japanese

RESEARCH EXPERIENCE

Research Assistant, Institute of Statistical Science Academia Sinica *Taipei, Taiwan*
Advisor: Prof. Ching-Pei Lee *Jan. 2022 – Apr. 2023*
Topic: Nonlinear Optimization RMDA Algorithm

- Utilized high-performance GPUs on AWS to compare various optimizers (RMDA, Adam, SGD, ProxSGD, ProxAdam) for different tasks and datasets (Recommendation: NRMS on MIND, Translation: GNMT on WMT 16 and English-German dataset, Image classification: EfficientNet, VGG, and ResNet on ImageNet).

AI Multimedia Systems Lab, NCCU *Taipei, Taiwan*
Advisor: Prof. Yan-Tsung Peng *Feb. 2023 – Feb. 2024*
Topic: Smoke detection

- Compared this method with supervised pre-trained models VGG16 and ResNet18 using transfer learning on real-world datasets and achieved an accuracy rate of 91%, demonstrating its generalization and effectiveness.

Topic: Mite detection

- Developed an AI module integrating image enhancement, object detection, and classification to detect the species and quantity of household mites, achieving 85.4% recognition accuracy, high mAP, and a counting error of 7%.

Human-centered Intelligent Systems Lab, National Yang Ming Chiao Tung University *Hsinchu, Taiwan*
Advisor: Prof. Yi-Ting Chen *Aug. 2023 – Feb. 2024*
Topic: Topology-aware traffic pattern recognition

- Studied the UAVDT dataset (a large-scale and challenging benchmark for UAV detection and tracking) and annotated it using a topology-aware pattern description method within Action-Slot.

WORK EXPERIENCE

Intern, Hyson Technology Inc. *Taipei, Taiwan*
Supervisor: President Wei-Cheng Lien *May 2023 – Feb. 2024*

- Applied research in smoke detection, mite detection, and underwater sandstorm detection to address real-world challenges in the industry.

Teacher Assistant, Computer Architecture and Organization, NCCU *Sept. 2023 – Jan. 2024*

PUBLICATIONS AND PRESENTATIONS

Yu-Ting Cheng, W.-C. Lien, Y.-T. Peng. Zero-Shot Smoke Detection: Enhancing Generalization with OpenAI's CLIP Model. Proceedings of National Computer Symposium, Taipei, Taiwan, pp.282-286, Dec. 2023.

Yu-Ting Cheng, Y.-T. Peng, W.-C. Lien. High-Precision AI-based Mite Detection and Classification using Image Enhancement Techniques. Proceedings of National Computer Symposium, Taipei, Taiwan, pp.287-291, Dec. 2023.

Yu-Ting Cheng, H.-M. Lin, W.-C. Lien. AI-Enhanced Household Mite Detection and Classification. Presented at 2024 IEEE 4th International Conference on Electronic Communications, Internet of Things and Big Data. **Best Conference Paper Award.** Taipei, Taiwan, Apr 19, 2024.

PROJECT EXPERIENCE

C/C++ Computer Programming *Spring 2022*

- Developed a DFS search algorithm to automatically find the optimal route on maps.
- Achieved the highest scores when competing with other search algorithms.

Data Structure *Fall 2021*

- Developed a C++ program to design a highway network model.
- Investigated the impact of the number of nodes on average distances.
- Evaluated the influence of different heaps on the execution time of the Dijkstra algorithm.

Introduction to Computer Science *Fall 2022*

- Utilized OpenAI to create an interactive robot (LineBot) for recording user health data.
- Established a user data database using SQLite.
- Designed user interfaces using Adobe Illustrator.

Java Computer Programming *Spring 2021*

- Designed a Monopoly game using Java API.
- Coded the game logic in Java.
- Designed the game interface using Adobe Illustrator.

Database Management Systems *Spring 2021*

- Managed customer purchase data for a clothing store using an SQL database.
- Designed a clothing store's web interface using Java API for both customers and administrators.