Ming-Yang Ho

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Education

M.S. in Bioinformatics Sep. 2019 – Sep. 2021
National Taiwan University (GPA: 4.20/4.30) *Taipei, Taiwan*

- Research topic: 2D/3D Computer Vision, Multimodal Deep Learning, Digital Health, Cyber Security
- Thesis advisor: Prof. Yufeng Jane Tseng

Pharm.D. in Pharmacy Sep. 2014 – Jun. 2019
National Cheng Kung University (GPA: 4.06/4.30) *Tainan, Taiwan*

Research Experience

Journal Reviewer Feb. 2023 - Present
IEEE Transactions on Medical Imaging (Impact Factor: 10.6)

Research Assistant Feb. 2023 – Present
Department of Computer Science and Information Engineering, National Taiwan University *Taipei, Taiwan*

- Invented Dense Normalization for unpaired image-to-image translation at arbitrary resolutions
- Designed a semi-supervised turning time segmentation algorithm incorporating 3D human pose estimation
- Explored inpainting and semi-supervised learning techniques for applications in gait analysis

Conference Reviewer Nov. 2022 - Present
IEEE/CVF Conference on Computer Vision & Pattern Recognition (CVPR) 2023 & 2024

Research Assistant Sep. 2019 – Sep. 2021
Department of Computer Science and Information Engineering, National Taiwan University *Taipei, Taiwan*

- Formulated a multimodal (2D/3D vision & speech) deep learning algorithm for Parkinson's disease diagnosis
- Investigated the temporal consistency in video-based 3D human pose estimation
- Created a web service and 3D visualizer for protein binding structure prediction
- Employed computational strategies in the development of a COVID-19 vaccine

Work Experience

Senior Machine Learning Engineer Oct. 2021 – Present
aetherAI *Taipei, Taiwan*

- Led a research team to invent Kernelized Instance Normalization (published in *ECCV* 2022)
- Directed a research team to demystify the challenges of semi-supervised object detection in pathological images
- Invented a linear-time Non-Maximum Suppression algorithm, achieving over 1,000-fold reduction in computational time for nuclei detection
- Reduced manual effort by over 400% through the implementation of a distributed annotation and inference system
- Explored and developed package encryption strategies
- Optimized and accelerated instance segmentation and object detection algorithms

Data Engineer Intern Jul. 2020 – Dec. 2020
Dcard *Taipei, Taiwan*

- Designed and integrated an automatic image cropping system using deep learning
- Conceived an efficient algorithm with contrastive learning to identify cyber warriors among 1,000,000+ users

Summer Research Intern Jun. 2019 - Sep. 2019
Institute of Information Science, Academia Sinica *Taipei, Taiwan*

- Employed the RGB concept to craft a deep learning-based mutation prediction algorithm

Clinical Pharmacist Intern Sep. 2018 - Jun. 2019
National Cheng Kung University Hospital *Tainan, Taiwan*

- Developed an Android application, "Vancalc", for vancomycin dosage estimation (Google Play)
- Provided patient care in specialized departments including psychiatry, cardiology, nephrology, and the intensive care unit

Publications

[1] **Ho, M. Y.***, Wu, M. S., & Wu, C. M. (2022). Ultra-high-resolution unpaired stain transformation via Kernelized Instance Normalization. In *European Conference on Computer Vision (**ECCV**)* (pp. 490-505). Cham: Springer Nature Switzerland. (* corresponding author)

[2] Huang, Y. W., Lin, O. A., Su, B. H., Hsieh, P. H., **Ho, M. Y.**, Kuo, T. C., & Tseng, Y. J. (2022). Taiwan Controlled Substances Database. *Journal of the Formosan Medical Association*, 121(12), 2649-2652.

[3] Liu, L. C.†, **Ho, M. Y.**†, Su, B. H., Wang, S. Y., Hsu, M. T., & Tseng, Y. J. (2021). PanGPCR: predictions for multiple targets, repurposing and side effects. *Bioinformatics*, 37(8), 1184-1186. († equal contribution)

[4] **Ho, M. Y.***, Tsai, Y. S., Wang, J. J., & Wang, T. W. (2020). Potential Security and Privacy Issues in Novel Taiwanese National Electronic Identification system. *Taiwan Academic Network (TANET)* (pp. 1264-1269). (* corresponding author)

[5] **Ho, M. Y.**, Wu, M. S., Wu, C. M., & Tseng, Y. J. (2023). Every Pixel Has its Moments: Seamless Ultra-High-Resolution Unpaired Image-to-Image Translation via Dense Normalization. (under review at *CVPR* 2024)

[6] **Ho, M. Y.**, Kuo, M. C., Chen, C. S., Wu, R. M., Chuang, C. C., Shih, C. S., & Tseng, Y. J. (2023) Pathological Gait Analysis with an Open-Source Cloud-Enabled Platform Empowered by Semi-Supervised Learning – PathoOpenGait. (under review at *IEEE Journal of Biomedical and Health Informatics*)

[7] Yang, Y. Y., **Ho, M. Y.**, Tai, C. H., Wu, R. M., Kuo, M. C., & Tseng, Y. J. (2023) FastEval Parkinsonism: An instant deep learning–assisted video-based online system to automatically evaluate parkinsonian motor symptom using finger tapping. (under review at *npj Digital Medicine*)

Teaching Experience

Undergraduate Research Mentor Jun. 2023 - Present

Department of Computer Science and Information Engineering, National Taiwan University *Taipei, Taiwan*

- Guided two undergraduates from UCLA and CU in research on inpainting and semi-supervised learning

Invited Lecturer Spring 2023

School of Pharmacy, National Cheng Kung University *Tainan, Taiwan*

- Course: Applications in Smart Medication using AI Image Recognition (Instructor: Prof. Ching-Lan Cheng)
- Topic: Security, Privacy, and Robustness in Machine Learning and Deep Learning Models

Teaching Assistant Spring 2023

Department of Computer Science and Information Engineering, National Taiwan University *Taipei, Taiwan*

- Course: A Practical Guide to Drug Development in Academia: The SPARK Approach (Instructor: Prof. Yufeng Jane Tseng)
- Designed a real-time investment website to foster interaction among students (GitHub)

Invited Lecturer Spring 2022

Department of Biomedical Engineering, National Taiwan University *Taipei, Taiwan*

- Course: Application of Deep Learning in Medical Imaging (Instructor: Dr. Chao-Yuan Yeh)
- Topic: An Introduction to Deep Learning and Computer Vision

Teaching Assistant Spring 2021

Department of Electrical Engineering, National Taiwan University *Taipei, Taiwan*

- Course: Machine Learning (Instructor: Prof. Hung-yi Lee)
- Collaborated on using speech-to-text and text-to-speech techniques to translate a Mandarin course into English

Teaching Assistant Spring 2021

Department of Electrical Engineering, National Taiwan University *Taipei, Taiwan*

- Course: Web Programming (Instructor: Prof. Chung-Yang Huang)
- Organized a hackathon centered around developing the 2048 game using ReactJS (GitHub)

Teaching Assistant Fall 2020

Department of Computer Science and Information Engineering, National Taiwan University *Taipei, Taiwan*

- Course: Bioinformatics and Cheminformatics Microcourse (Instructor: Prof. Yufeng Jane Tseng)
- Conducted lectures on Python programming and lab sessions

Volunteering

Programming Workshop Leader Apr. 2023 - Oct. 2023
National Taiwan University *Taipei, Taiwan*
- Conducted a workshop, imparting industrial-level programming and development skills to students (YouTube)

Conference Organizer Apr. 2021 - Aug. 2021
Machine Learning Summer Schools (MLSS) 2021 *Taipei, Taiwan*

Regulatory Compliance Monitor Jan. 2018 - Mar. 2018
Public Health Bureau of HsinChu County Government *Hsinchu, Taiwan*

Awards

Best Master Thesis Award Apr. 2022
National Taiwan University *Taipei, Taiwan*
- Topic: Look, Listen, and Diagnose: A Deep Learning-Based Comprehensive Parkinson's Disease Evaluation System with a 3D Point Cloud and Acoustic Features

Outstanding Graduate Award Jun. 2019
National Cheng Kung University *Tainan, Taiwan*

Leadership

Chief of the Design Department Sep. 2017 – Jun. 2019
Pharmaceutical Students' Association of Taiwan *Taiwan*
- Initiated and conducted free courses on Adobe software for members
- Led a team to design posters, promoting medical and health-related issues

Chief of the Design Department Jun. 2017 – Sep. 2017
International Pharmaceutical Students Federation Conference *Taipei, Taiwan*
- Directed a team in designing the key vision, posters, booklets, and souvenirs for the conference

Chief of the Design Department Sep. 2016 – Jun. 2017
National Cheng Kung University Student Union *Tainan, Taiwan*
- Led a team in designing posters and slides for students and the school, while providing guidance on Adobe software usage

Chief of the Academic Department Sep. 2015 – Jun. 2017
Pharmacy Student Association, National Cheng Kung University *Tainan, Taiwan*
- Organized and executed academic events for students

Open Source Projects

SUPERB: Speech processing Universal PERformance Benchmark system Jun. 2021 - Oct. 2021
- Led the development and implementation of the back end of this web service (GitHub) (Deployment)

Technical Skills

Languages (Human): Mandarin (Native), English (Advanced), Japanese (Advanced), French (Intermediate)
Programming Languages: C/C++, Python, JavaScript, Rust, Verilog
Frameworks: PyTorch, ReactJS, Flask, FastAPI, Celery
Developer Tools: Docker, MySQL, Git, Linux
Applications: Distributed System Design, Web Programming, Computer Vision, Machine Learning, Cyber Security