Hsun-Yu (Yoyo) Lee

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Hsun Yu Lee

Education

- **National Taiwan University** *09/2022 - Present*
  Double Major in Information Management and Financial Engineering GPA: 4.11/4.3

- **Wu-ling Senior High School**
  Class of 2019 09/2019 - 06/2022

Experience

- **MIT IMES Collins Lab** *Massachusetts Institute of Technology*
  Visiting Student 07/2024 - 08/2024
  - *Conducting research under Professor James J. Collins and Professor Kaixiong Zhou's guidance.*
  - *Engaging in the development and implementation of advanced machine learning models aimed at identifying potential materials for solid-state batteries.*
  - *Fine-tuned large-scale LLMs, including the Llama2 model with LoRA, using tools like Chemprop and RDKit to create a research database for solid-state battery applications.*
  - *Identified the limitations of LLMs in generating novel molecules for battery materials and successfully transitioned to diffusion models, achieving better outcomes in material discovery.*

- **NTU π.01 Lab** *National Taiwan University*
  Undergraduate Researcher 02/2024 - Present
  - *Doing research under Professor Wu Fang Jing's guidance.*
  - *Research on Fingerprint-based Indoor Localization with Deep learning and data augmentation via GAN.*
  - *Developed and implemented deep learning models, such as convolutional neural networks (CNNs), for feature extraction and localization prediction.*
  - *Designed and implemented GAN-based data augmentation techniques to enhance the diversity and robustness of the training dataset.*
  - *Main author of the paper "Generating Light-based Fingerprints for Indoor Localization" nominated as one of the best papers at the Mobile Computing Conference 2024.*

- **Machine Learning Course** *National Taiwan University*
  Teaching Assistant 09/2024 - 12/2024
  - *Supporting a class of 450 students along with 9 other TAs under the direction of Prof. Hsuan-Tien Lin.*
  - *Responsible for TA hours, focusing on problem-solving sessions, homework revisions, and final project guidance.*
  - *Contributed to enhancing students' understanding of key Machine Learning concepts through clear explanations and effective feedback.*

- **Calculus Course for Information Management Department** *National Taiwan University*
  Teaching Assistant 09/2023 - Present
  - *Leading a class of 30 students with 3 other TAs.*
  - *Covered topics including Vector Calculus, Sequence and Series, Taylor's Theorem, and Lagrange Multiplier, delivering clear explanations and facilitating understanding.*
  - *Received positive feedback from students for fostering an inclusive and supportive learning environment, demonstrating strong mastery of course material.*

Papers

- **Generating Light-based Fingerprints for Indoor Localization** *08/2024*
  Candidate of best papers at the Mobile Computing Conference 2024
  - Main author of the paper.
  - Research focuses on generating light-based fingerprints for indoor localization using deep learning and data augmentation techniques.
  - Experimental results demonstrated that the integration of GAN-augmented data significantly enhanced localization accuracy, reducing the prediction error from 62.93 cm to 49.295 cm. This study validates the feasibility of VLC-based indoor localization and highlights the potential of GANs in improving localization performance.

Awards

- **NTU Presidential Award** *11/2024*
  Issued by National Taiwan University.
  - Awarded to the top 2% of undergraduate students in the department, recognizing exceptional academic performance and learning achievements.
  - Selection was based on academic merit, learning achievements, and compliance with the NTU Regulations for the Establishment of the Presidential Award.

- **Smart Logistics Datathon - First Runner-up** *04/2024*
  Issued by The Chinese University of Hong Kong, Asian Institute of Supply Chain and Logistics.
  - Achieved first runner-up in the CUHK's Smart Logistics Datathon.
  - The competition involved data from Hong Kong International Airport (HKIA), where we designed a deep learning model to predict time consumption for various sections during transactions and examinations. This model aimed to improve efficiency at HKIA and demonstrated our capability to apply advanced analytics and machine learning to real-world logistics challenges.

Projects

- **2023 Fall Machine Learning Final Project** *09/2023 - 01/2024*
  Applying ML to predict the number of bicycles available at rental stations across Taipei city.
  - Tools & technologies used: Machine Learning algorithms, Pytorch, Tensorflow, etc.
  - Developed accurate predictive models using regression and time-series forecasting techniques to forecast the availability of bicycles at rental stations in Taipei. Conducted thorough analysis and validation of the models to ensure robust performance across diverse scenarios and conditions.

- **NASA Space Apps Challenge** *10/2022 - 11/2022*
  Designed scientific data visualization features using vector calculus principles.
  - Tools & technologies used: NumPy, Pytorch, Matplotlib, etc.
  - Contributed to the design and implementation of vector-calculus-based scientific data visualization, enhancing data representation and analysis within the multi-use App.

Technical Skills and Interests

Languages: English, Mandarin

Soft Skills: Problem-solving, Teamwork, Communication, Adaptability

Coursework: Machine Learning Foundations and Techniques, Data Structures and Advanced Programming, Algorithm Design and Analysis, Statistical learning and Machine Learning, etc.

Areas of Interest: Artificial Intelligence, Data Analysis, Deep Learning, LLM

Positions of Responsibility

- **Leader,** Badminton Club, NTU Information Management Dept. *09/2022 - Present*
- **Instructor,** FinTech Club, National Taiwan University *11/2022 - 12/2023*
- **Instructor,** Computer Science Club, Wu-Ling Senior High *09/2021 - 06/2022*
- **First Position,** English Debate Team, Wu-Ling Senior High *11/2020 - 06/2021*