Hung-Chieh (Oscar) Fang

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Research Interest

I am broadly interested in robust machine learning, particularly on *learning under distribution shift* and *decision-making under uncertainty*.

Education

National Taiwan University (NTU)   *Sept 2020 – Present*
B.S. in Computer Science and Information Engineering (GPA: 4.01/4.3)   *Taipei, Taiwan*

- **Academic Awards**: Dean's List Award * 1 (Top 5% of the department)
- **Research Awards**: Principal's Bachelor's Thesis Awards, Undergrad Research Exhibition Honorable Mention
- **Selected Courses**: Machine Learning*, Reinforcement Learning*, Applied Deep Learning*, Advanced Deep Learning*, Information Theory and Coding Technique*, Game Theory*, Deep Learning for Human Language Processing*
- **Teaching Assistant**: Machine Learning*, Introduction to Generative Artificial Intelligence

(* denotes graduate-level.)

Selected Publications

(* indicates equal contribution; Google scholar: https://scholar.google.com/citations?user=MpGIrR0AAAAJ)

[3] **Hung-Chieh Fang**, Po-Yi Lu, and Hsuan-Tien Lin. "Reducing Source-Private Bias in Extreme Universal Domain Adaptation". In *submission of ICLR*. [PDF]. 2024.

[2] **Hung-Chieh Fang***, Nai-Xuan Ye*, Yi-Jen Shih, Puyuan Peng, Hsuan-Fu Wang, Layne Berry, Hung-yi Lee, and David Harwath. "Integrating Self-supervised Speech Model with Pseudo Word-level Targets from Visually-grounded Speech Model". In *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) Workshop: Self-supervision in Audio, Speech and Beyond*. [PDF]. 2024.

[1] **Hung-Chieh Fang***, Kuo-Han Hung*, Chao-Wei Huang, and Yun-Nung Chen. "Open-Domain Conversational Question Answering with Historical Answers". In *The 2nd Asian Chapter of the Association for Computational Linguistics (AACL)*. [PDF]. 2022.

Research Experience

Summer Research Program, The Chinese University of Hong Kong   *July 2024 – Present*
Visiting Student, Advisor: <u>Prof. Irwin King</u>, <u>Dr. Yifei Zhang</u>   *New Territories, Hong Kong*

- Researching on *federated optimization under arbitrary client availability* (ongoing).

Computational Learning Lab, NTU   *Feb 2023 – Present*
Undergraduate Researcher, Advisor: <u>Prof. Hsuan-Tien Lin</u>   *Taipei, Taiwan*

- Researched on *universal domain adaptation*. [3]
  - Identified an unsolved sub-task, highlighting the limitations of existing methods.
  - Provided a deeper understanding into the failure of widely used partial domain alignment paradigms.
  - Proposed using self-supervised loss to reduce source-private bias and improve robustness across scenarios.
  - Awarded the best thesis in EECS college in 2024 NTU Bachelor's Thesis Award.

Machine Intelligence & Understanding Lab, NTU   *Mar 2022 - Sept 2024*
Undergraduate Researcher, Advisor: <u>Prof. Yun-Nung (Vivian) Chen</u>   *Taipei, Taiwan*

- Researched on *open-domain conversational question answering*. [1]
  - Proposed combining the signal from historical answers with the noise-reduction ability of knowledge distillation to improve information retrieval and question answering.
  - Awarded honorable mention in the 2022 NTU CSIE Undergraduate Research Exhibition.

Speech Processing & Machine Learning Lab, NTU   *Sept 2022 – Sept 2023*
Undergraduate Researcher, Advisor: <u>Prof. Hung-yi Lee</u>   *Taipei, Taiwan*

- Researched on *visually-grounded self-supervised learning on speech processing*. [2]
  - Proposed using vision as a surrogate for paired transcripts to enrich the semantic information in self-supervised speech models.
  - Collaborated with <u>Speech, Audio, and Language Technologies (SALT) Lab</u> from UT Austin.

Teaching Experience

EE5100: Introduction to Generative Artificial Intelligence, NTU   *Jan 2024 – June 2024*
Teaching Assistant   *Taipei, Taiwan*

- Designed homework on the *interpretability and explainability of large language models*. [Link]

CSIE5043: Machine Learning, NTU   *Feb 2023 – June 2023*
Teaching Assistant   *Taipei, Taiwan*

- Co-designed ML algorithm homework about *theory of generalization*.
- Co-designed a final project about *ordinal ranking* problems for 250+ students.
- Held weekly TA hours to guide students on their assignments.

Work Experience

MediaTek Research   *Jan 2023 – Mar 2023*
Machine Learning Intern   *Taipei, Taiwan*

- Worked on *personally identifiable information removal* for large language models.
- Studied the *best-arm identification problem in linear bandits*.

Cinnamon AI   *July 2022 – Aug 2022*
Deep Learning Intern   *Taipei, Taiwan*

- Developed a pipeline for meeting summarization with state-of-the-art deep learning models.

Selected Projects

Zero-shot Text Behavior Retrieval [Report]

- Proposed retrieving task-specific data for *imitation learning* from a large, unlabeled dataset using *text-based inputs* to achieve zero-shot generalization.

Honors And Awards

Dean's List Award, *NTU CSIE*   *2024*
Top 5% of the department.

Principal's Award, *NTU Bachelor's Thesis Award*   *2024*
Top 2 theses among all graduates & the best thesis in the EECS College.

Honorable Mention, *NTU CSIE Undergraduate Research Exhibition*   *2022*
Top 6 research projects in the CSIE Department.

Special Award, *LINE FRESH Hackathon*   *2021*
Top 5 out of 300+ teams.