Jui-Yang Hsu

SOFTWARE ENGINEER · RESEARCH SCIENTIS

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Work Experience _____

Google Inc.

SOFTWARE ENGINEER

Building infrastructure to revolutionize software development life cycle.

Computing & Artificial Intelligence Group, MediaTek

Software Engineer

- Architect and contributor of the in-house compiler auto-optimization toolkit (evolutionary algorithm, RL)
- Proposed, implemented, and maintained Prefect-based distributed computing platform for heterogeneous devices (host, various generations of smartphone platforms)
- Proposed novel algorithms for auto-optimization, boosted the inference speed in 20 ETHZ AI-benchmark (out of 38)
- Inventor of 4 patents in compiler auto-optimization, efficient and scenario-aware network architecture search (NAS)

Visual Document Intelligence Team, AI & RD Center, Microsoft

Research Intern

- Proposed and refactored model training to Pytorch Lightning for faster development and easier maintenance
- Migrated model training to the official AzureML training pipeline
- Implemented unified multi-vertical document understanding model (multi-task learning, data-augmentation)

Speech Processing & Machine Learning Laboratory, NTU

Graduate Researcher, supervised by Prof. Hung-Yi Lee

- Researched on low-resource speech recognition Focused on improving the system with gradient-based meta-learning and transfer learning [thesis] [slides] [1]
- As the network administrator, managed a 10+ nodes, 20+ GPU Slurm-based computing cluster Incorporated netdata to the workstation for real-time monitoring Developed automatic health check to improve user/administrator experience

Natural Language Processing Team, Apple Inc.

Research Intern, supervised by Dr. Jerome Bellegarda

• Researched on generative modeling to develop algorithms enhancing user experience during keyboard usage

• The research results have been incorporated in iOS 13 and published as US patent [2]

Speech Processing & Machine Learning Laboratory, NTU

UnderGraduate Researcher, supervised by Prof. Hung-Yi Lee & Prof. Lin-Shan Lee

- Proposed hierarchical attention-based model for TOEFL Listening Comprehension Test by machine [3] [5]
- Researched on self-supervised audio word embeddings

Speech & Sound Team, Delta Research Center (DRC)

Research Intern

- Proposed and built the interface between Kaldi & Tensorflow, migrating acoustic modeling to Tensorflow for faster development
- Researched on end-to-end speech recognition based on alignment-free algorithm (CTC)
- Reduced 3% character error rate (CER) on the corpus held by DRC, nearly comparable to the original system

Education

National Taiwan University (NTU)

M.S. IN COMPUTER SCIENCE & ELECTRICAL ENGINEERING

- Speech Processing & Machine Learning Laboratory, Advisor: Prof. Hung-Yi Lee
- Thesis: Meta Learning in End-to-End Speech Recognition

Kungliga Tekniska högskolan (KTH)

Exchange student in Computer Science & Communication

National Taiwan University (NTU)

B.S. IN ELECTRICAL ENGINEERING

• Department of Electrical Engineering, GPA: 4.02/4.3

Taipei, Taiwan Sep. 2023 - Present

Hsinchu, Taiwan

Jan. 2022 - Aug. 2023

Taipei, Taiwan Oct. 2020 - Mar. 2021

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Taipei, Taiwan

Oct. 2018 - Sep. 2020

Cupertino, USA July 2018 - Sep. 2018

Taipei, Taiwan

July 2015 - June 2017

Taipei, Taiwan

July 2016 - Aug. 2016

Taipei, Taiwan Oct. 2018 - Feb. 2021

Stockholm, Sweden Aug. 2017 - June 2018

Taipei, Taiwan Sep. 2013 - June 2018

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Publications

- [1] Jui-Yang Hsu, Yuan-Jui Chen, Hung-Yi Lee. "Meta Learning for End-to-End Low-Resource Speech Recognition". In International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2020. [link] [video]
- [2] Jerome R. Bellegarda, **Jui-Yang Hsu**, Partha Lal, Akash Mehra. "User-realistic path synthesis via multi-task generative adversarial networks for continuous path keyboard input" *US Patent, US20200379640A1*. [link]
- [3] Wei Fang[†], **Jui-Yang Hsu**[†], Hung-Yi Lee, Lin-Shan Lee. "Hierarchical Attention Model for Improved Comprehension of Spoken Content". *In IEEE Workshop on Spoken Language Technology (SLT)*, 2016. [link]
- [4] Yi-Chen Chen, **Jui-Yang Hsu**, Cheng-Kuang Lee, Hung-yi Lee "DARTS-ASR: Differentiable Architecture Search for Multilingual Speech Recognition and Adaptation". *In Conference of the International Speech Communication Association (INTERSPEECH)*, 2020. [link]
- [5] Chia-Hsuan Lee, Hung-Yi Lee, Szu-Lin Wu, Chi-Liang Liu, Wei Fang, Jui-Yang Hsu, Bo-Hsiang Tseng. "Machine Comprehension of Spoken Content: TOEFL Listening Test and Spoken SQuAD". In IEEE/ACM Transactions on Audio, Speech, and Language Processing (TASLP), 2019. [link]

Honors & Awards_

Chiao Hsin Cheng Scholarship , NTU EECS Conference Grant , Ministry of Science and Technology	July, 2017 Dec., 2016
Lead TA, NTU CommE5054 Deep Learning for Human Language Processing	Spring 2020
Reviewer, Annual Meeting of the Association for Computational Linguistics (ACL)	2020

TA, NTU EE5184 Machine Learning

2020 2020 Spring 2017