Yung-Sung Chuang

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Education

National Taiwan University(NTU) *Sep. 2016 - Jun. 2020*

B.S. in Electrical Engineering

- **GPA:** overall: **4.18/4.30**, last 60: **4.27/4.30**, ranking (in the first three years): **20/252**
- **Honors:** Dean's List * 4 (S '18, S '19, F '19, S '20), Irving T. Ho Memorial Scholarship (F '18, F '19)
- **Selected Courses:** Data Structure and Programming 2017 Fall (**A+**), Algorithms 2019 Spring (**A+**), Machine Learning 2018 Spring (**A+**), Digital Speech Processing 2018 Fall (**A+**), Deep Learning for Computer Vision 2019 Spring (**A+**), Computer Architecture 2019 Fall (**A+**)
- **Teachings:** Teaching Assistant, Deep Learning for Human Language Processing (CommE5054), 2020 Spring, Prof. Hung-yi Lee

Research Experiences

Speech Processing Lab, NTU, *Advisor: Prof. Hung-yi Lee & Lin-shan Lee* *Aug. 2018 - PRESENT*

Undergraduate Researcher

- Researched on **Non-autoregressive Speech-to-Text Translation**.
- Researched on **Cross-Lingual Zero-shot Transfer** tasks. [*ArXiv Link*]
- Researched on **Language Model Pre-training** for speech and text to solve **Spoken Question Answering** tasks. [*Interspeech'20*]
- Researched on **Text Style Transfer** with CycleGAN architecture [*Github Link*] and delete-insert-based Transformer. [*Github Link*]

Machine Intelligence and Understanding Lab, NTU, *Advisor: Prof. Yun-Nung (Vivian) Chen* *Feb. 2019 - PRESENT*

Undergraduate Researcher

- Researched on **Knowledge Distillation** to improve **Lifelong Learning** for language tasks.[*EMNLP'20*]
  - Won **Appier Best Application Award** in **2020 NTU CSIE Undergrad Special Research Exhibition**.
- Researched on **Cycle Consistency and Duality of NLU and NLG** to improve both NLU/NLG tasks.[*Findings@EMNLP'20*]
- Researched on Generating Conclusions from Medical RCT Papers. [*LOUHI 2019@EMNLP*]
  - Won the **2nd place** and **Appier 1st prize** in **2019 NTU CSIE Undergrad Special Research Exhibition**.

Intelligent Agent Systems Lab, Academia Sinica, *Advisor: Prof. Wen-Lian Hsu* *Jul. 2018 - Feb. 2019*

Research Intern and Research Assistant

- Built a supervised **accurate collocation parsing system** with state-of-the-art deep learning methods. [*Github Link*]
- Developed a fully-unsupervised methods to find collocation pairs in a large corpus with Word2Vec technique. [*Github Link*]

Publications & Preprints († indicates equal contribution)

[1] **Yung-Sung Chuang** , Shang-Yu Su, Yun-Nung Chen. "Lifelong Language Knowledge Distillation". *Accepted to EMNLP 2020*.

[2] **Yung-Sung Chuang**† , Shang-Yu Su†, Yun-Nung Chen. "Dual Inference for Improving Language Understanding and Generation". *Accepted to Findings of EMNLP 2020*.

[3] Chi-Liang Liu†, Tsung-Yuan Hsu†, **Yung-Sung Chuang**†, Hung-yi Lee. "A Study of Cross-Lingual Ability and Language-specific Information in Multilingual BERT". Accepted to ACL 2020 Repl4NLP workshop.

[4] **Yung-Sung Chuang** , Chi-Liang Liu , Hung-Yi Lee, Lin-shan Lee. "SpeechBERT: An Audio-and-text Jointly Learned Language Model for End-to-end Spoken Question Answering". *Accepted to Interspeech 2020*. *arXiv preprint arXiv:1910.11559*

[5] Alexander Te-Wei Shieh†, **Yung-Sung Chuang**†, Shang-Yu Su, Yun-Nung Chen. "Towards Understanding of Medical Randomized Controlled Trials by Conclusion Generation". In *Proceedings of the 10th International Workshop on Health Text Mining and Information Analysis at EMNLP (LOUHI 2019)*

[6] **Yung-Sung Chuang**. "Robust Chinese Word Segmentation with Contextualized Word Representations". *arXiv preprint arXiv:1901.05816*

Teachings

Teaching Assistant on Deep Learning for Human Language Processing 2020 Spring Course *Mar. 2020 - Jun. 2020*

- Designed and in charge of Homework 1 on **End-to-end Speech Recognition** topic. Slide Link: https://bit.ly/dlhlp-hw1
- Introduced to **Non-Autoregressive Sequence Generation** topic on class.
- Youtube Video Link: https://www.youtube.com/watch?v=jvyKmU4OM3c

Skills

Languages C++, Python, MATLAB, Shell Scripting
Libraries&Toolkits Tensorflow, PyTorch, Keras, LaTeX, Git, Linux

Projects

Speech Recognition for Impaired Speaker [*Github Link*] [*Report Link*] *Jun. 2020*

Course Final Project of "**Introduction to Biomedical Engineering**"

- Automatic Speech Recognition for Impaired Voice Speaker via Personalized Adaptation.
- Reducing the word error rate **from 80% to 20%** for patient voice (in Mandarin).
- Supporting online learning from user feedback.

DPP: Decentralized Publishing Platform [*Github Link*] [*Poster Link*] *Jun. 2020*

Course Final Project of "**Networking and Multinmedia Lab**"

- A Decentralized Publishing Platform created with Blockchain and Etheruem smart contract.

Multi-Source Domain Adaptation Challenge [*Poster Link*] *Jun. 2019*

Course Final Project of "**Deep Learning for Computer Vision**"

- Experimented on unsupervised domain adaptation (UDA) for multi-source dataset from ICCV2019 Workshop Challenge.
- Won the **2nd place** in **2019 NTUEE Undergraduate Innovation Award.** [*Photo Link*]

Pywordseg: State-of-the-art Chinese Word Segmentation Toolkit [*Github Link*] [*PyPI Link*] *Jan. 2019*

Course Final Project of "**Digital Speech Processing**"

- Developed an open source **state-of-the-art** Chinese word segmentation system with BiLSTM and ELMo, helping the downstream Chinese NLP task.

Functionally Reduced And-Inverter Graph [*Github Link*] *Jan. 2018*

Course Final Project of "**Data Structure and Programming**"

- Performing Boolean logic simulations and identify functionally equivalent candidate pairs in the circuit. Reducing the circuit size automatically.

Big Two Game Environment and Agent [*Github Link*] *Jan. 2017*

Course Final Project of "**Computer Programming**"

- Developed a human-computer game program of the big-two game.
- Designed the main algorithm of the machine agent and the whole architecture of the game.

Competitions & Awards

NCTS Health Hackathon 2018 *Jun. 2018*

1st Place with NT$120,000 (out of 18 teams) | [*News link*] | [*Cert. Link*]

- A hackathon on organized by *National Center for Theoretical Sciences* and *Mount Sinai Health System, New York*.
- Proposed an improved **system for doctors shifting in hospital** — PRO (Patient Relay Optimizer) to help doctors grasp all info about patients, status, tasks at a glance, reducing the risk of information shifting incompletely. [*Github Link*]
- Won the **1st place** of **2018 H. Spectrum Demo Day** (out of 21 teams) | [*News Link*]

MakeNTU 2018 *Mar. 2018*

Best Tech Award with NT$50,000 & **Microsoft Enterprise Award** (out of 50 teams) | [*Photo Link 1*] | [*Link 2*]

- A hackathon focus on the combination of hardware and software, organized by NTU
- Built an automatic machine for picking good coffee beans with deep learning technique, For better quality and time-saving.
- Placed in **top 8** in the finalist of **Microsoft Imagine Cup Taiwan National Final 2018**.

HackNTU 2017 *Jul. 2017*

1st Place of Department of Transportation with NT$50,000 (out of 100+ teams) | [*Photo Link*]

- Built a **smart bus bell system** for solving the problems of getting on the right bus in the huge and busy city.
- Exhibited on **WCIT2017 (World Congress on Information Technology)**. Made a presentation to visitors from all over the world.

Activities

Director of NTUEE plus Department, Student Association of NTUEE *Jun. 2018 - Aug. 2019*

- Developed a **social media network**, which will link together alumni and undergrad students of NTUEE.
- Hosted interviews, talks, providing information about the latest technological developments from alumni.

Guest Lecturer on Machine Learning 2019 Spring Course *Mar. 2019*

- Introduced to research papers on **Unsupervised Syntactic Parsing** topics.
- Youtube Video Link: https://www.youtube.com/watch?v=YIuBHB9Ejok

Speaker on MakeNTU 2019 workshop, Taipei 101 *Mar. 2019*

- Taught to about 100+ people to use Microsoft Azure, OpenCV and Raspberry Pi 3 to build a face recognition locking system.
- Slide Link: https://bit.ly/MakeNTU2019