

# Yung-Sung Chuang

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## RESEARCH INTERESTS

Large-scale CLIP pretraining (MetaCLIP 2) [arXiv'25]; LLM post-training: self-supervised alignment (SelfCite) [ICML'25], decoding for factuality (DoLa) [ICLR'24], and detecting hallucinations (Lookback Lens) [EMNLP'24]; Retrieval-augmented LLMs (SAIL) [EMNLP'23], passage retrieval (Query Reranking) [ACL'23], and sentence embeddings (DiffCSE) [NAACL'22]; RL for VLM reasoning (in progress)

## Education

### Massachusetts Institute of Technology (MIT)

Sep. 2021 - PRESENT

#### PH.D. STUDENT IN COMPUTER SCIENCE

- **GPA: 5.0/5.0** (up-to-date)
- Computer Science & Artificial Intelligence Laboratory (CSAIL), Advisor: Dr. James Glass

### National Taiwan University (NTU)

Sep. 2016 - Jun. 2020

#### B.S. IN ELECTRICAL ENGINEERING

- **GPA:** overall: **4.18/4.30**, major: **4.22/4.30**
- **Honors:** Presidential Award \* 4 (S '18, S '19, F '19, S '20), Irving T. Ho Memorial Scholarship (F '18, F '19)

## Research Experiences

### Spoken Language Systems Group, CSAIL, MIT, Advisor: James Glass

Sep. 2021 - PRESENT

#### RESEARCH ASSISTANT

- **Aligning LLMs** to generate high-quality **citations** via **self-supervision**: *SelfCite* [ICML'25]
- Detecting **context hallucinations** with only **attention maps**: *Lookback Lens* [EMNLP'24]
- Reducing **hallucinations** and improving **factuality** in **LLM decoding**: *DoLa* [ICLR'24]
- Improving **passage retrieval** for **open-domain QA** by **LLMs-reranked query expansions**: *Query Reranking* [ACL'23]
- Proposing **difference-based contrastive learning** for unsupervised sentence embedding: *DiffCSE* [NAACL'22]
- Building a comprehensive and reproducible benchmark for **self-supervised speech representation learning**. [Interspeech'21]

### Meta, FAIR, Seattle, Advisor: Luke Zettlemoyer

May 2025 - PRESENT

#### RESEARCH INTERN

- Researching on **reinforcement learning** for **visual reasoning** (in progress).

### Meta, FAIR, Seattle, Advisors: Hu Xu & Daniel Li & Scott Yih

May 2024 - Jan 2025

#### RESEARCH INTERN

- Scaling **CLIP pretraining** to multilingual web data via **data curation** from scratch: *MetaCLIP 2* [arXiv'25]
- **Aligning LLMs** to generate high-quality **citations** via **self-supervision**: *SelfCite* [ICML'25]

### Microsoft, Redmond, Advisor: Pengcheng He

Jun. 2023 - Sep. 2023

#### RESEARCH INTERN

- Reducing **hallucinations** and improving **factuality** in **LLM decoding**: *DoLa* [ICLR'24]

### Machine Intelligence and Understanding Lab, NTU, Advisor: Prof. Yun-Nung (Vivian) Chen

Feb. 2019 - Aug. 2020

#### UNDERGRADUATE RESEARCHER

- Proposing **knowledge distillation** to improve **continual (lifelong) learning** for language tasks: *L2KD* [EMNLP'20]
- Investigating **cycle consistency** and duality of **NLU** and **NLG** to improve both tasks [EMNLP'20]
- Enabling **GPT-2** to generate conclusions from medical RCT papers [LOUHI 2019@EMNLP]

### Speech Processing Lab, NTU, Advisor: Prof. Hung-yi Lee & Lin-shan Lee

Aug. 2018 - Aug. 2021

#### UNDERGRADUATE RESEARCHER

- Investigating **non-autoregressive** speech-to-text translation with CTC [ACL'21]
- Proposing framework for **end-to-end** spoken language understanding **without ASR** [ICASSP'21]
- **Pre-training** BERT with speech-text jointly for **spoken question answering** tasks: *SpeechBERT* [Interspeech'20]

## Selected Publications († indicates equal contribution.)

[1] **Yung-Sung Chuang**, Yang Li, Dong Wang, Ching-Feng Yeh, Kehan Lyu, Ramya Raghavendra, James Glass, Lifei Huang, Jason Weston, Luke Zettlemoyer, Xinlei Chen, Zhuang Liu, Saining Xie, Wen-tau Yih, Shang-Wen Li, Hu Xu “**MetaCLIP 2: A Worldwide Scaling Recipe**”. *arXiv* 2025.

[2] **Yung-Sung Chuang**, Benjamin Cohen-Wang, Shannon Shen, Zhaofeng Wu, Hu Xu, Xi Victoria Lin, James Glass, Shang-Wen Li, Wen-tau Yih “**SelfCite: Self-Supervised Alignment for Context Attribution in Large Language Models**”. *ICML* 2025.

- [3] **Yung-Sung Chuang**, Linlu Qiu, Cheng-Yu Hsieh, Ranjay Krishna, Yoon Kim, James Glass “**Lookback Lens: Detecting and Mitigating Contextual Hallucinations in Large Language Models Using Only Attention Maps**”. *EMNLP 2024 main (long)*.
- [4] **Yung-Sung Chuang**, Yujia Xie, Hongyin Luo, Yoon Kim, James Glass, Pengcheng He “**DoLa: Decoding by Contrasting Layers Improves Factuality in Large Language Models**”. *ICLR 2024*.
- [5] Hongyin Luo, **Yung-Sung Chuang**, Yuan Gong, Tianhua Zhang, Yoon Kim, Xixin Wu, Danny Fox, Helen Meng, James Glass “**SAIL: Search-Augmented Instruction Learning**”. *Findings of EMNLP 2023*.
- [6] **Yung-Sung Chuang**, Wei Fang, Shang-Wen Li, Wen-tau Yih, James Glass “**Expand, Rerank, and Retrieve: Query Reranking for Open-Domain Question Answering**”. *Findings of ACL 2023*.
- [7] **Yung-Sung Chuang**, Rumen Dangovski, Hongyin Luo, Yang Zhang, Shiyu Chang, Marin Soljačić, Shang-Wen Li, Wen-tau Yih, Yoon Kim, James Glass “**DiffCSE: Difference-based Contrastive Learning for Sentence Embeddings**”. *In Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL) 2022*.
- [8] Shu-wen Yang, Po-Han Chi<sup>†</sup>, **Yung-Sung Chuang**<sup>†</sup>, Cheng-I Jeff Lai<sup>†</sup>, Kushal Lakhotia<sup>†</sup>, Yist Y. Lin<sup>†</sup>, Andy T. Liu<sup>†</sup>, Jiatong Shi<sup>†</sup>, Xuankai Chang, Guan-Ting Lin, Tzu-Hsien Huang, Wei-Cheng Tseng, Ko-tik Lee, Da-Rong Liu, Zili Huang, Shuyan Dong, Shang-Wen Li, Shinji Watanabe, Abdelrahman Mohamed, Hung-Yi Lee. “**SUPERB: Speech processing Universal PERFORMANCE Benchmark**”. *In Interspeech 2021*.
- [9] **Yung-Sung Chuang**, Shang-Yu Su, Yun-Nung Chen. “**Lifelong Language Knowledge Distillation**”. *In EMNLP 2020*.
- [10] **Yung-Sung Chuang**<sup>†</sup>, Shang-Yu Su<sup>†</sup>, Yun-Nung Chen. “**Dual Inference for Improving Language Understanding and Generation**”. *In Findings of EMNLP 2020*.
- [11] **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**”. *In Proc. Interspeech 2020*.

## Teachings & Talks

**Speaker** at Embodied Intelligence Seminar, MIT CSAIL

Apr. 2025

- Topic: Reducing Hallucinations in LLMs via Decoding, Detection, and Citation. [\[YouTube Link\]](#)

**Teaching Assistant** on Natural Language Processing 2023 Fall @MIT

Sep. 2023 - Dec. 2023

- Course website: <https://mit-6861.github.io/>

**Tutorial Speaker** at ACL-IJCNLP 2022

Nov. 2022

- Co-hosted a tutorial: **Recent Advances in Pre-trained Language Models: Why Do They Work and How to Use Them** with Prof. Hung-yi Lee and Cheng-Han Chiang at ACL-IJCNLP 2022. [\[Slide Link\]](#) [\[YouTube Link\]](#)
- Introduced the topic of **Contrastive Learning for Pre-trained Language Models**.

## Honors & Awards

**Reviewers**, NeurIPS (2021, 2022, 2023, 2024, 2025), ICLR (2021, 2022, 2023, 2024, 2025), ICML (2022, 2023, 2024, 2025), AAAI (2023), EMNLP (2022, 2023), ICASSP (2021, 2022, 2023), Interspeech (2021)

Apr. 2021 - PRESENT

**Presidential Award - for top 5% students (4 times)**, Electrical Engineering Dept. at NTU

Spring '18, Spring '19, Fall '19, Spring '20

**Irving T. Ho Memorial Scholarship (2 times)**, EECS at NTU

Fall '18, Fall '19

## Skills

**Languages** Python, C++, Go, MATLAB, Shell Scripting

**Libraries&Toolkits** PyTorch, Huggingface transformers, VeRL