

# Yung-Sung Chuang

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## RESEARCH INTERESTS

- **Multimodal & Pre-training**: scaling CLIP pre-training to multilingual/worldwide web data (MetaCLIP 2) [[arXiv'25](#)]
- **LLM Alignment & Factuality**: self-supervised alignment (SelfCite) [[ICML'25](#)], decoding strategies for factuality (DoLa) [[ICLR'24](#)], hallucination detection (Lookback Lens) [[EMNLP'24](#)]
- **Retrieval**: retrieval-augmented LLMs (SAIL) [[EMNLP'23](#)], query reranking [[ACL'23](#)], sentence embeddings (DiffCSE) [[NAACL'22](#)]
- **Reinforcement Learning for VLMs**: RL for text-image interleaved reasoning (Meta FAIR internship, ongoing)

## Education

### Massachusetts Institute of Technology (MIT)

Sep. 2021 - PRESENT

PH.D. CANDIDATE 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

### Meta FAIR, Seattle Advisor: [Luke Zettlemoyer](#)

May 2025 – Present

RESEARCH SCIENTIST INTERN

- Designing **reinforcement learning methods** for **visual reasoning in multimodal LLMs**, enabling better text-image interleaved reasoning (ongoing project).

### Meta FAIR, Seattle Advisors: [Hu Xu](#), [Shang-Wen \(Daniel\) Li](#), and [Wen-tau \(Scott\) Yih](#)

May 2024 – Jan. 2025

RESEARCH SCIENTIST INTERN

- Pre-trained **MetaCLIP 2** [[arXiv'25](#)], a large-scale CLIP (ViT-H/14), by building worldwide **data curation** pipeline from scratch, beating **SoTA on multilingual tasks** by around 5%, with around 1% **boost on English tasks**, breaking the “curse of multilinguality”.
- Proposed **SelfCite** [[ICML'25](#)], a **self-supervised alignment** method for generating **accurate citations**, with up to 5.3% boost.

### Microsoft, Redmond Advisor: [Pengcheng He](#)

Jun. 2023 – Sep. 2023

RESEARCH SCIENTIST INTERN

- Developed **DoLa** [[ICLR'24](#)], a decoding strategy improving **factual accuracy** in LLM outputs by 12-17%, integrated into HuggingFace Transformers library as one of the generation strategies [[HF Transformers Docs](#)].

### Spoken Language Systems Group, CSAIL, MIT Advisor: [James Glass](#)

Sep. 2021 – Present

RESEARCH ASSISTANT

- Led multiple projects on **factuality and hallucinations in LLMs**: SelfCite [[ICML'25](#)], DoLa [[ICLR'24](#)], Lookback Lens [[EMNLP'24](#)].
- Developed **retrieval-based** and **sentence embeddings** methods: SAIL [[EMNLP'23](#)], *Query Reranking* [[ACL'23](#)], *DiffCSE* [[NAACL'22](#)].
- Published **5 first-author papers** at top conferences.

### National Taiwan University Advisors: [Hung-yi Lee](#), [Yun-Nung \(Vivian\) Chen](#), and [Lin-shan Lee](#)

2018 – 2021

UNDERGRADUATE RESEARCHER

- Built benchmarks and models for **speech representation learning**, **speech-to-text translation (ST)**, and **spoken language understanding (SLU)**: *SUPERB* benchmark [[Interspeech'21](#)], non-autoregressive ST [[ACL'21](#)], and SLU without ASR [[ICASSP'21](#)].
- Improved **continual learning** with GPT-2 and explored **NLU/NLG duality**: *L2KD* [[EMNLP'20](#)], and *dual inference* [[EMNLP'20](#)].
- Developed *SpeechBERT* [[Interspeech'20](#)], a joint speech-text pretrained model for spoken QA.

## 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 (under review)*.
- [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**”. In *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**”. In *EMNLP 2024*.

- [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”. In *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”. In *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”. In *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 *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 *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 *Interspeech 2020*.

## Teachings & Talks

**Speaker** at Embodied Intelligence Seminar 2025, 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

- Worked with Prof. Jacob Andreas, Yoon Kim, and Chris Tanner. [\[Course Website\]](#)

**Tutorial Speaker** at AACL-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 AACL-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, MetaCLIP, TRL, VeRL, DeepSpeed, Ray, Slurm