Ethan Chern

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Education

Shanghai Jiao Tong University *Shanghai, China*

PhD in Computer Science (Advisor: Prof. Pengfei Liu) *May 2023 -*

- Working on LLM alignment (math, code, safety, honesty) and LLM evaluation (hallucinations, safety), and multimodal learning.

Carnegie Mellon University (CMU) *Pittsburgh, PA*

School of Computer Science, Language Technologies Institute

MS in Artificial Intelligence and Innovation *Aug. 2021 - May 2023*

- Working on mitigating and evaluating hallucinations in LLMs.

National Yang Ming Chiao Tung University (NYCU) *Hsinchu, Taiwan*

BS in Electrical and Computer Engineering *Sept. 2017 - June 2021*

- Academic Excellence Award (top 5%), 2020

Publication

- Zhen Huang, Zengzhi Wang, … , **Ethan Chern**, … , Pengfei Liu. "**OlympicArena: Benchmarking Multi-discipline Cognitive Reasoning for Superintelligent AI**." *submitted to NeurIPS 2024*

- Steffi Chern, Zhulin Hu, Yuqing Yang, **Ethan Chern**, Yuan Guo, Jiahe Jin, Binjie Wang, Pengfei Liu. "**BeHonest: Benchmarking Honesty of Large Language Models**." *submitted to NeurIPS 2024*

- Run-Ze Fan, Xuefeng Li, Haoyang Zou, Junlong Li, Shwai He, **Ethan Chern**, Jiewen Hu, Pengfei Liu. "**Reformatted Alignment**." *submitted to ACL 2024.*

- Steffi Chern, **Ethan Chern**, Graham Neubig, Pengfei Liu. "**Can Large Language Models be Trusted for Evaluation? Scalable Meta-Evaluation of LLMs as Evaluators via Agent Debate**." *submitted to COLM 2024.*

- Chunpu Xu, Steffi Chern, **Ethan Chern**, Ge Zhang, Zekun Wang, Ruibo Liu, Jing Li, Jie Fu, Pengfei Liu. "**Align on the Fly: Adapting Chatbot Behavior to Established Norms**." *submitted to EMNLP 2024.*

- Yuqing Yang, **Ethan Chern**, Xipeng Qiu, Graham Neubig, Pengfei Liu. "**Alignment for Honesty**." *submitted to NeurIPS 2024.*

- **Ethan Chern***, Haoyang Zou*, Xuefeng Li*, Jiewen Hu*, Junlong Li, Pengfei Liu. "**Generative AI for Math: Abel**." *preprint.* (*= Core contributors).

- Shiqi Chen, Yiran Zhao, Jinghan Zhang, **I-Chun Chern**, Siyang Gao, Pengfei Liu, Junxian He "**FELM: Benchmarking Factuality Evaluation of Large Language Models**." *NeurIPS 2023.*

- **I-Chun Chern**, Steffi Chern, Shiqi Chen, Weizhe Yuan, Kehua Feng, Chunting Zhou, Junxian He, Graham Neubig, Pengfei Liu. "**Factool: Factuality Detection in Generative AI – A Tool Augmented Framework for Multi-Task and Multi-Domain Scenarios**." *submitted to EMNLP 2024.*

- **I-Chun Chern**, Zhiruo Wang, Sanjan Das, Bhavuk Sharma, Pengfei Liu, Graham Neubig. "**Improving Factuality of Abstractive Summarization via Contrastive Reward Learning**." *Third Workshop on Trustworthy Natural Language Processing at ACL 2023.*

- **I-Chun Chern**, Kuo-Hsuan Hung, Yi-Ting Chen, Tassadaq Hussain, Mandar Gogate, Amir Hussain, Yu Tsao, Jen-Cheng Hou. "**Audio-Visual Speech Enhancement and Separation by Leveraging Multi-Modal Self-Supervised Embeddings**." *Advances in Multi-modal Hearing Assistive Technologies (AMHAT) at IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2023.*

- **I-Chun Chern**, Steffi Chern, Heng-Cheng Kuo, Huan-Hsin Tseng, Kuo-Hsuan Hung, Yu Tsao. "**Voice Direction-of-Arrival Conversion**." *IEEE International Workshop on Machine Learning for Signal Processing (MLSP) 2023.*

- Kao-Yueh Kuo, **I-Chun Chern**, and Ching-Yi Lai. "**Decoding of Quantum Data-Syndrome Codes via Belief Propagation**." *IEEE International Symposium on Information Theory (ISIT) 2021.*

Research Experience

Generative AI Lab, Shanghai AI Lab *Shanghai, China*

Research Assistant (Advisor: Prof. Pengfei Liu) *May. 2023 - Present*

- Working on LLM Alignment (Abel, Align on the Fly, Alignment for Honesty), LLM Evaluation (FacTool, ScaleEval, OlympicArena, BeHonest), and Multimodal Learning

Research Projects in Carnegie Mellon University *Pittsburgh, PA*

Independent Research (Advisors: Prof. Graham Neubig, Dr. Pengfei Liu) *Aug. 2021 - May 2023*

- Working on mitigating and evaluating the facuality of LLMs.

Biomedical Acoustic Signal Processing Lab, Academia Sinica, Taiwan
Taipei, Taiwan

STUDENT RESEARCH ASSISTANT (ADVISOR: PROF. YU TSAO)
Mar. 2022 - May 2023

- **Audio-Visual Speech Enhancement based on Efficient Multimodal Neural Networks**
  - Built end-to-end SSL-based audio-visual multimodal speech enhancement and speech separation models.
- **Voice Direction-of-Arrival (DOA) Conversion**
  - Proposed voice DOA conversion; devised generative models to perform voice DOA conversion.

Quantum Computing Lab, NYCU
Hsinchu, Taiwan

RESEARCH ASSISTANT (ADVISOR: PROF. CHING-YI LAI)
Feb. 2020 - Aug. 2021

- **DS-BP: A Novel Fault-Tolerant Quantum Computation Scenario**
  - Devised a low complexity decoding algorithm (refined GF(4)-based belief propagation) for quantum data-syndrome (DS) codes to correct both data qubits and syndrome bit-flip errors concurrently.

Work Experience

Amazon (AWS), Amazon Just Walk Out
Seattle, WA

SOFTWARE DEVELOPMENT ENGINEER
Oct. 2023 - Feb. 2024

- **In-Store Payment Management and Development**
  - Developing and Maintaining payment systems of Amazon Just Walk Out.

Luca.ai
Pittsburgh, PA

MACHINE LEARNING ENGINEER
Oct. 2022 - May 2023

- **Reading Fluency Learning Platform for Children with Dyslexia**
  - Designed innovative story generation systems with advanced large language models, developed phoneme-level ASR systems for real-time disfluency detection, and integrated workflows for real-time analytical reports to enhance instructional approaches.

Amazon (AWS), Amazon Just Walk Out
Seattle, WA

SOFTWARE DEVELOPMENT ENGINEER INTERN
May 2022 - Aug. 2022

- **In-Store Devices Provisioning and ML Deployment Systems Improvements**
  - Enhanced the visibility of in-store devices (cameras and edge computing devices) for provisioning and ML deployment, automated device provisioning, debugging workflow, and ticketing process to reduce response time and improve efficiency, and generated cross-team impacts across vision algorithm, tech installation, hardware device, and device management teams.

Realtek Semiconductor Corp., Multimedia Department
Hsinchu, Taiwan

DIGITAL IC CONSULTANT
June 2019 - July 2021

- **Chip Design for AI-Driven Keyword Wake-Up Function**
  - Optimized AI-based voice keyword algorithm, developed IC hardware architecture, and implemented RTL coding for TV voice-wake-up in standby mode with low power consumption; designed an efficient digital circuit for speech recognition, reducing computational complexity to 1/16; resulting product won the 2022 Computex Best Choice of the Year and Golden Award.

Skills

Software   Python (TensorFlow, PyTorch), Large Language Models, Distributed Training, C/C++, MATLAB, Java, JavaScript, HTML, Assembly language (x86-64, 8051)