Yun-Wei Chu

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OBJECTIVE

I am deeply passionate about natural language processing (LLMs generation and evaluation, multi-modal NLP), machine learning (efficiency and fairness-aware ML), and AI for social good.

EDUCATION

Purdue University *2021 - 2025*
Ph.D. in Electrical & Computer Engineering

National Chiao Tung University *2015 - 2017*
M.S. in Electrical & Control Engineering

National Chi Nan University *2011 - 2015*
B.S. in Electrical Engineering

RESEARCH EXPERIENCE

Research Assistant. Purdue University 2021 - 2025

- Developed a calibration method for federated learning (FL) to enhance model reliability.
- Proposed a robust distributed pre-training scheme that provides better and fair initialization for unseen FL tasks.
- Designed an efficient meta-learning-based communication method for large language models (LLMs) in federated multilingual machine translation, improving translation performance and communication efficiency.
- Employed personalized FL to mitigate biases in user modeling for underrepresented minorities.

Research Intern. NEC Labs 2024 Summer

- Designed a Visual-RAG system to retrieve useful medical images for multi-modal large language models (MLLMs). Fine-tuned MLLMs' to improve their image-text association capabilities and enhance diagnostic performance.

Research Intern. Microsoft 2022 Summer

- Collected a news dataset from Bing based on user intensively searched entities, implemented LLMs, and conducted quantitative analysis and human evaluation to investigate entity-centric news headline generation task.

NLP Research Scientist. Academia Sinica 2019 - 2021

- Conducted research in multi-modal language generation and evaluation, introducing the first automatic evaluation metric aligned with human judgment for Visual Storytelling and engineered a Transformer language model with a human-like discriminator to enhance visual stories' quality.

SELECTED PUBLICATIONS

Unlocking the Potential of Model Calibration in Federated Learning. Y.-W. Chu, D.-J. Han, S. Hosseinalipour, C. Brinton. *ICLR*, 2025. [Paper]

Reducing Hallucinations of Medical Multimodal Large Language Models with Visual Retrieval-Augmented Generation. Y.-W. Chu, K. Zhang, C. Malon, M. Min. *AAAI GenAI4Health*, 2025.

Rethinking the Starting Point: Collaborative Pre-Training for Federated Learning. Y.-W. Chu, D.-J. Han, S. Hosseinalipour, C. Brinton. *AAAI*, 2025. [Paper]

Only Send What You Need: Learning to Communicate Efficiently in Federated Multilingual Machine Translation. Y.-W. Chu, D.-J. Han, C. Brinton. *FL@FM-TheWebConf'24*, 2024. [Paper]

Mitigating Biases in Student Performance Prediction via Personalized Federated Learning. Y.-W. Chu, S. Hosseinalipour, E. Tenorio, L. Cruz, K. Douglas, A. Lan, C. Brinton. *CIKM*, 2022. [Paper]

Learning to Rank Visual Stories From Human Ranking Data. Y.-W. Chu, C.-Y. Hsu, V. Chen, K.-C. Lo, C. Chen, T.-H. Huang and L.-W. Ku. *ACL-IJCNLP*, 2022. [Paper]

Plot and Rework: Modeling Storylines for Visual Storytelling. Y.-W. Chu, C.-Y. Hsu, T.-H. Huang and L.-W. Ku. *ACL-IJCNLP*, 2021. [Paper]

Stretch-VST: Getting Flexible With Visual Stories. Y.-W. Chu, C.-Y. Hsu, T.-L. Yang, T.-H. Huang and L.-W. Ku. *ACL-IJCNLP*, 2021. [Paper]