

Ting-Chih Chen

AI/ML research assistant, Virginia Tech, Blacksburg, Virginia, US
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EDUCATION

Virginia Tech, Blacksburg, US 01/2022 — 12/2023
Master of Science in Computer Science and Applications GPA: 3.7/4.0
Thesis Title: Multimodal Multi-Document Evidence Summarization For Fact-Checking.

National Changhua University of Education, Changhua, Taiwan 09/2015 — 06/2019
Bachelor of Science in Computer Science and Information Engineering

EXPERIENCE

Virginia Tech Blacksburg, US
AI/ML research assistant 03/2022 — Present

- Pioneered the development of the first multimodal claim generation method utilizing AMRBART on news domain.
- Led the creation of a video dataset for researching inductive and abductive reasoning, encompassing data collection and cleaning.
- Employed the SOTA multimodal models to extract valuable insights and induce knowledge from LLMs, resulting in BERTScore F1 of 86.5%.
- Developed an evidence summarization model using **RLHF** and **PPO** with **Llama2**, achieving 48.6% accuracy, surpassing the SOTA model by 4.6%.

Republic of China Army Kaohsiung, Taiwan
Private second class 2020 — 2021

National Center for High-Performance Computing Taichung, Taiwan
Research engineer intern 05/2019 — 08/2019

- Participated in building the highly secured dataset for the object detection task.
- Implemented YOLOv3 for the object detection task, achieving an 82% mAP, surpassing the previous method by 4%.
- Collaborated on **ETL processes, data structures, data warehousing, and data architecture**, reducing time costs by 20%.

National Changhua University of Education Changhua, Taiwan
Research assistant 02/2018 — 06/2019

- Surveyed the integration of blockchain technology with industrial applications, demonstrating superior security and efficiency gains compared to traditional methods.

PROJECTS

When Trust is a Factor [URL] Blacksburg, US
03/2022 — Present

- Developed a cross-modal summarization model using **RLHF** and **PPO** techniques for fact-checking.
- Integrated multimodal data into a **knowledge graph format**.
- Enabled users to leverage a GNN for discerning between real and fake information.

PUBLICATIONS

- Tang, C.-W., Chen, T.-C., Nguyen, K. A., Mehrab, K. S., Ishmam, A. M., & Thomas, C. (2024). M3D: MultiModal Multi-Document Fine-Grained Inconsistency Detection. In Proceedings of the **2024 Conference on Empirical Methods in Natural Language Processing (EMNLP)** November 12-16, 2024, Miami, Florida.
- Chen, T.-C., Tang, C.-W., & Thomas, C. MetaSumPerceiver: Multimodal Multi-Document Evidence Summarization for Fact-Checking. In Proceedings of the **62nd Annual Meeting of the Association for Computational Linguistics (ACL)** (Volume 1: Long Papers), August 11–16, 2024, Bangkok, Thailand (pp. 8742–8757). [paper] [code]
- Chen, T.-C.. Multimodal Multi-Document Evidence Summarization For Fact-Checking. **Master's thesis**, December 1, 2023, Virginia Tech. [thesis]
- Chen, T.-C., & Lee, C.-I. Application of LSTM Neural Network in Stock Price Movement Forecasting with Technical Analysis Index. In Proceedings of the **17th International Conference on Innovation and Management (IAM)**, February 4-7, 2020, Sapporo, Japan (pp. 85-92). [paper]

AWARDS

National Center for High-Performance Computing research intern award <i>Research engineer intern</i>	Taichung, Taiwan 08/2019
National Changhua University of Education senior project award <i>Senior student</i>	Changhua, Taiwan 06/2019

ACADEMIC SERVICE

Reviewer

- ACM Transactions on Intelligent Systems and Technology (TIST) 2024.

TEACHING

CS5024 Ethics and Professionalism in CS <i>Teaching assistant</i>	Blacksburg, US 01/2023 — 05/2023
CS3114 Data Structures and Algorithms <i>Teaching assistant</i>	Blacksburg, US 08/2022 — 12/2022

SKILLS

- **Programming:** Python, Java, C, C++, Javascript, HTML, CSS, php, SQL, R
- **Technologies:** PyTorch, Scikit-learn, Tensorflow, Hugging Face, OpenCV, ROS
- **Platforms:** AWS, GCP