Chia-Yuan (Scott) Chang

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LinkedIn Profile Home Page

Research Interests

- **Generative Models** [1]: Developing machine learning solutions based on data generation.
- **Large Language Models** [2]: Efficient training paradigms for LLMs.
- **Domain Generalization** [3]: Model-agnostic frameworks for domain generalization.
- **Fairness in Healthcare** [7]: Fair machine learning algorithms for healthcare tasks.

Education

Texas A&M University College Station, TX
Ph.D. in Computer Science (Advisors: Dr. Na Zou and Dr. Xia Hu) *Aug. 2021 – Expected May 2025*

National Cheng Kung University Tainan, Taiwan
Master of Science in Structures and Materials *Sep. 2013 – Jun. 2015*

Publications

[1] **C.Y. Chang**, Y.N. Chuang, Z. Jiang, K.H. Lai, A. Jiang, and N. Zou, "CODA: Temporal Domain Generalization via Concept Drift Simulator," arXiv'23 (ICLR'24 (submitted))

[2] H. Jin, X. Han, J. Yang, Z. Jiang, **C.Y. Chang**, and X. Hu, "GrowLength: Accelerating LLMs Pretraining by Progressively Growing Training Length," arXiv'23 (ICLR'24 (submitted))

[3] **C.Y. Chang**, Y.N. Chuang, G. Wang, M. Du, and N. Zou, "DISPEL: Domain Generalization via Domain-Specific Liberating," arXiv'23 (ICLR'24 (submitted))

[4] Y. Wang, X. Han, **C.Y. Chang**, D. Zha, U. Braga-Neto, and X. Hu, "Auto-PINN: Understanding and Optimizing Physics-Informed Neural Architecture," Thirty-seventh Conference on Neural Information Processing Systems (NeurIPS'23 AI4Science)

[5] Y.N. Chuang, G. Wang, **C.Y. Chang**, et al., and X. Hu "DiscoverPath: A Knowledge Refinement and Retrieval System for Interdisciplinarity on Biomedical Research," ACM International Conference on Information and Knowledge Management (CIKM'23 Demo)

[6] **C.Y. Chang**, Y.N. Chuang, K.H. Lai, X. Han, X. Hu, N. Zou, "Towards Assumption-free Bias Mitigation," arXiv (AAAI'23 SRRAI (submitted))

[7] **C.Y. Chang**, J. Yuan, S. Ding, Q. Tan, K. Zhang, X. Jiang, X. Hu, and N. Zou, "Towards Fair Patient-Trial Matching via Patient-Criterion Level Fairness Constraint," AMIA 2023 Annual Symposium (AMIA'23)

[8] S. Ding, Q. Tan, **C.Y. Chang**, et al., and X. Hu, "Multi-Task Learning for Post-transplant Cause of Death Analysis: A Case Study on Liver Transplant," AMIA 2023 Annual Symposium (AMIA'23)

[9] Y.N. Chuang, K.H. Lai, R. Tang, M. Du, **C.Y. Chang**, N. Zou, X. Hu, "Mitigating Relational Bias on Knowledge Graphs," arXiv (Preprint)

[10] **C.Y. Chang***, C.W. Lu*, and C.J. Wang, "A Multi-step-ahead Markov Conditional Forward Model with Cube Perturbations for Extreme Weather Forecasting," The 36th Annual AAAI Conference (AAAI'21)

[11] **C.Y. Chang**, and et al., "Query Expansion with Semantic-based Ellipsis Reduction for Conversational IR," The Twenty-Ninth Text REtrieval Conference (TREC'20)

Experience

Texas A&M University College Station, TX
Graduate Research Assistant *Aug. 2021 – Present*

- Developed model-agnostic algorithms that focus on generalization issues in machine learning models.
- Developed fairness machine learning frameworks for healthcare tasks by task-specific regularizations.
- Proposed the efficient pre-training paradigm for large language models during pre-processing.

WeHelp Bootcamp Online
Teaching Assistant *Feb. 2021 – Jun. 2021*

- Gave the instructions for deploying MySQL and API servers on AWS.
- Advised students to implement their own API server with Flask and Node.js.

Academia Sinica Taipei, Taiwan
Research Assistant *Oct. 2019 – Dec. 2020*

- Developed a ranking algorithm for financial news recommender systems to reduce 41% of traders' daily reading time.
- Researched and published papers in time-series forecasting and large language model applications.
- Won the 2^{nd} place award in an information retrieval competition via a T5-based coreference and reranking framework.

EZTABLE Taipei, Taiwan
Backend Engineer *Jan. 2019 – Sep. 2019*

- Designed/developed APIs for the website and mobile app deployed on cloud services, including AWS and GCP.
- Utilized CI/CD tools (Jenkins and Drone) for automatic testing and exporting reports.
- Improved cloud infrastructures that reduced 19.2% server loading and 23.8% cost.

Projects

Recommender System Algorithms | *E.SUN Bank* Nov. 2019 – Dec. 2020

- Developed recommender system algorithms with the machine learning method.
- Fine-tuned BERT pre-trained models for leveraging given limited labeled data.
- Built and trained an RNN-based model to tackle a time-series problem.
- Designed data pre-processing and post-processing pipelines to enhance the efficiency of experiments.
- Led and organized the project members and communicated with E.SUN Bank partners.

TripChat [Link] | *Side Project* Sep. 2018 – Nov. 2018

- Developed front-end part with JavaScript library React.
- Implemented RESTful APIs with Node.js and a real-time co-editing map with Socket.IO.
- Implemented Cache for low updated frequency data with Redis.
- Built the environment as a Docker Image and deployed on AWS EC2.

Awards and Honors

CIKM 2023 Best Demo Paper Honorable Mention [5] Oct. 2023

AMIA 2023 Best Student Paper Finalist [8] Oct. 2023

NSF Travel Award for Quality and Productivity Research Conference (QPRC) 2023 Jun. 2023

2^{nd} and 4^{th} Place Award, TREC CAsT, Text REtrieval Conference [11] [Link] Oct. 2020

National Chen Kung University Scholarship Award (Top 10%) 2014, 2015

Invited Talks

KDD 2023 Machine Learning in Finance Tutorial – *Algorithmic Fairness in Finance* [Link] Aug. 2023

QPRC 2023 Short Course – *Fair Machine Learning in Healthcare* [Link] Jun. 2023