Zheda Mai

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EDUCATION

Ph.D. Computer Science and Engineering, Ohio State University 2022-2027 (Expected)
- Research areas: **Efficient Robust Interpretable Model Adaptation**, **Vision Foundation Models**, **Multimodal LLMs**, **Continual Learning**
- Advisor: Professor Wei-Lun Chao.
- Google Scholar: 1600+

M.A.Sc. Information Engineering, University of Toronto 2018-2021
- Research areas: Continual Learning, Recommender Systems
- Advisor: Professor Scott Sanner.

B.A.Sc. Engineering Science, University of Toronto 2012-2017

RESEARCH EXPERIENCE

Research Intern, *Amazon Lab126*, Sunnyvale May 2025 - Aug. 2025
- Research on efficient MLLMs with model stitching.

Research Intern, *Bosch Research*, Sunnyvale May 2024 - Aug. 2024
- Research on time series analysis with language and vision foundation models.

PUBLICATIONS

* denotes equal contributions and co-first authorship.

Conferences

[NeurIPS'25] **Zheda Mai***, Ping Zhang*, Quang-Huy Nguyen, Wei-Lun Chao. Revisiting Semi-Supervised Learning in the Era of Foundation Models. *NeurIPS*, 2025.

[NeurIPS'25] Jianyang Gu, Samuel Stevens, Elizabeth G Campolongo, Matthew J Thompson, Net Zhang, Jiaman Wu, Andrei Kopanev, **Zheda Mai**, Alexander E. White, James Balhoff, Wasla Dahdul, Daniel Rubenstein, Hilmar Lapp, Tanya Berger-Wolf, Wei-Lun Chao, Yu Su. Bioclip 2: Emergent properties from scaling hierarchical contrastive learning. *NeurIPS*, 2025, **Spotlight**.

[CVPR'25] **Zheda Mai**, Ping Zhang, Cheng-Hao Tu, Hong-You Chen, Li Zhang, Wei-Lun Chao. Lessons and Insights from a Unifying Study of Parameter-Efficient Fine-Tuning (PEFT) in Visual Recognition. *CVPR*, 2025, **Highlight (2.98%)**.

[CVPR'25] Arpita Chowdhury, Dipanjyoti Paul, **Zheda Mai**, Jianyang Gu, Ziheng Zhang, Kazi Sajeed Mehrab, Elizabeth G Campolongo, Daniel Rubenstein, Charles V Stewart, Anuj Karpatne, Tanya Berger-Wolf, Yu Su, Wei-Lun Chao. Prompt-CAM: Making Vision Transformers Interpretable for Fine-Grained Analysis. *CVPR*, 2025.

[CVPR'25] Ziheng Zhang, Jianyang Gu, Arpita Chowdhury, **Zheda Mai**, David Carlyn, Tanya Berger-Wolf, Yu Su, Wei-Lun Chao. Finer-CAM: Spotting the Difference Reveals Finer Details for Visual Explanation. *CVPR*, 2025.

[NAACL'25] Zhongwei Wan, Hui Shen, Xin Wang, Che Liu, **Zheda Mai**, Mi Zhang. Attention Entropy-Guided Dynamic Cache Allocation for Efficient Multimodal Long-Context Inference. *NAACL*, 2025.

[ICASSP'25] Jiageng Zhu, Kehao Li, **Zheda Mai**, Hanchen Xie, Wael AbdAlmageed, Zubin Abraham. Attention-Driven Causal Discovery: From Transformer Matrices to Granger Causal Graphs for Non-Stationary Time-series Data. *ICASSP*, 2025.

[NeurIPS'24] **Zheda Mai***, Jihyung Kil*, Justin Lee, Zihe Wang, Kerrie Cheng, Lemeng Wang, Ye Liu, Arpita Chowdhury, Wei-Lun Chao. MLLM-CompBench: A Comparative Reasoning Benchmark for Multimodal LLMs. *NeurIPS*, 2024.

[NeurIPS'24] **Zheda Mai***, Arpita Chowdhury*, Ping Zhang*, Cheng-Hao Tu, Hong-You Chen, Vardaan Pahuja, Tanya Berger-Wolf, Song Gao, Charles Steward, Yu Su, Wei-Lun Chao. Fine-Tuning is Fine, if Calibrated. *NeurIPS*, 2024.

[NeurIPS'23] Cheng-Hao Tu*, Hong-You Chen*, **Zheda Mai**, Jike Zhong, Vardaan Pahuja, Tanya Berger-Wolf,

Song Gao, Charles Steward, Yu Su, Wei-Lun Chao. Holistic Transfer: Towards Non-Disruptive Fine-Tuning with Partial Target Data. *NeurIPS*, 2023.

[CVPR'23] **Zheda Mai***, Cheng-Hao Tu*, Wei-Lun Chao. Visual Query Tuning: Towards Effective Usage of Intermediate Representations for Parameter and Memory Efficient Transfer Learning. *CVPR*, 2023.

[WWW'22] **Zheda Mai***, Tianshu Shen*, Ga Wu, Scott Sanner. Distributional Contrastive Embedding for Clarification-based Conversational Critiquing. *WWW*, 2022.

[SIGIR'22] Zhaolin Gao, Tianshu Shen, **Zheda Mai**, Mohamed Reda Bouadjenek, Scott Sanner. Mitigating the Filter Bubble while Maintaining Relevance: Targeted Diversification with VAE-based Recommender Systems. *SIGIR*, 2022.

[AAAI'21] **Zheda Mai***, Dongsub Shim*, Jihwan Jeong*, Scott Sanner, Hyunwoo Kim, Jongseong Jang. Online Class-Incremental Continual Learning with Adversarial Shapley Value. *AAAI*, 2021 (**Oral**).

Journals

[JVCIR'23] Ruiwen Li, **Zheda Mai**, Chiheb Trabelsi, Zhibo Zhang, Jongseong Jang, Scott Sanner. TransCAM: Transformer Attention-based CAM Refinement for Weakly Supervised Semantic Segmentation. In *(JVCIR)*, 2023.

[IPM'23] Tianshu Shen, Jiaru Li, Mohamed Reda Bouadjenek, **Zheda Mai**, Scott Sanner. Unintended Bias in Language Model-driven Conversational Recommendation. In *IPM*, 2023.

[Neurocomputing'22] **Zheda Mai**, Ruiwen Li, Jihwan Jeong, David Quispe, Hyunwoo Kim, Scott Sanner. Online Continual Learning in Image Classification: An Empirical Survey. In *Neurocomputing*, 2022.

[AIJ'22] Vincenzo Lomonaco, ..., **Zheda Mai**, etc. CVPR 2020 Continual Learning in Computer Vision Competition: Approaches, Results, Current Challenges and Future Directions. In *AIJ*, 2022.

Workshops

[ICML'25] **Zheda Mai***, Justin Lee*, Chongyu Fan, Wei-Lun Chao. An Empirical Exploration of Continual Unlearning for Image Generation. *ICML* Workshops, 2025

[CVPR'25] Hanchen Xie, Rose Ma, Jiageng Zhu, **Zheda Mai**, Wael Abd-Almageed, Zubin Abraham. Mitigating Video Content Misalignment on Large Vision Model with Time-Series Data Alignment. *CVPR* Workshops, 2025

[NeurIPS'23] **Zheda Mai***, Tianle Chen*, Ruiwen Li, Wei-Lun Chao. Segment Anything Model (SAM) Enhanced Pseudo Labels for Weakly Supervised Semantic Segmentation. *NeurIPS* Workshops, 2023.

[CVPR'21] **Zheda Mai**, Ruiwen Li, Hyunwoo Kim, Scott Sanner. Supervised Contrastive Replay: Revisiting the Nearest Class Mean Classifier in Online Class-Incremental Continual Learning. *CVPR* Workshops, 2021.

[CVPR'20] **Zheda Mai**, Hyunwoo Kim, Jihwan Jeong, Scott Sanner. Batch-level Experience Replay with Review for Continual Learning. *CVPR* Workshops, 2020.

[ICDM'20] **Zheda Mai***, Ga Wu*, Kai Luo, Scott Sanner. Attentive Autoencoders for Multifaceted Preference Learning in One-class Collaborative Filtering. *ICDM* Workshops, 2020.

Under Review

[R1] **Zheda Mai***, Arpita Chowdhury*, Zihe Wang, Sooyoung Jeon, Lemeng Wang, Jiacheng Hou, Jihyung Kil, Wei-Lun Chao. AVA-Bench: Atomic Visual Ability Benchmark for Vision Foundation Models, 2025

[R2] Qinghua Liu*, Sam Heshmati*, **Zheda Mai***, Zubin Abraham, John Paparrizos, Liu Ren. MLLM4TS: Leveraging Vision and Multimodal Language Models for General Time-Series Analysis, 2025

Other Experience

Data Scientist, *Optimy AI*, Canada — Jan. 2021-Aug. 2022
- Developed machine learning models for customer engagement and purchase likelihood predictions.

Machine Learning Engineer Intern, *Pitney Bowes*, Canada — May 2019 - Oct. 2019
- Developed map-style extraction models with CNN and multi-task learning.

Software Engineer Intern, *AMD*, Canada — May 2015 - May 2016

- Developed design verification tool automation for Verilog.

AWARDS

Outstanding Reviewer Award for **NeurIPS** 2023
4th place of the CLVision Continual Learning challenge at **CVPR** 2021
1st place of the CLVision Continual Learning challenge at **CVPR** 2020
NEXT36 Fellow from NEXT Canada, 2018

PROFESSIONAL SERVICE

I am the organizer and chair for
- NeurIPS'25 Imageomics Workshop

I am a reviewer for
- NeurIPS: 2023, 2024, 2025
- ICML: 2023, 2024
- ICLR: 2024, 2025
- CVPR: 2024, 2025
- WACV: 2026
- IJCAI: 2024
- Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- ACM Computing Surveys
- Artificial Intelligence (AIJ)
- Frontiers in Artificial Intelligence

TALKS

Continual Learning in Image Classification. Vector Institute. July 2020
Recent Advances in Continual Learning. University of Toronto Jan. 2022

TEACHING

Teaching Assistant, Ohio State University
- CSE5524: Foundations of Computer Vision (2025)

Teaching Assistant, University of Toronto
- APS1070: Foundations of Data Analytics and Machine Learning (2019, 2020)
- MIE451: Decision Support Systems (2019, 2020)
- MIE1628: Big Data Science (2020)

MENTORING

Justin Lee (OSU B.S; 2024-2025): Machine Unlearning and Model Merge
Tianle Chen (OSU B.S -> BU Ph.D.; 2022-2023): Weakly Supervised Semantic Segmentation
Tianshu Shen (UToronto M.S. 2021-2022): Conversational Recommender Systems
Ruiwen Li (Utoronto M.S. 2020-2022): Weakly Supervised Semantic Segmentation

VOLUNTEER

Judge and mentor
- OSU Artificial Intelligence Hackathon: 2022, 2023, 2024