Chenyang (Danny) Ma

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EDUCATION

University of Oxford   Oct 2023 – July 2027 (Expected)
Ph.D. in Computer Science

University of Cambridge   Oct 2022 – July 2023
MPhil in Advanced Computer Science   Distinction

University of Michigan—Ann Arbor, MI   Sept 2019 – May 2022
*B.S.E. in Computer Engineering, Minor in Mathematic*s   Cumulative GPA: 3.97

SELECTED PUBLICATIONS

- **Chenyang Ma**, Kai Lu, Ta-Ying Cheng, Niki Trigoni, Andrew Markham. "*See, Imagine, Plan: Discovering and Hallucinating Tasks from a Single Image.*" **In Submission**, 2024.

- **Chenyang Ma**, Xinchi Qiu, Daniel Beutel, Nicholas Lane. "*Gradient-less Federated Gradient Boosting Tree with Learnable Learning Rates.*" **EuroMLSys Workshop**, 2023.

- Fengyu Yang*, **Chenyang Ma***, Jiacheng Zhang, Jing Zhu, Wenzhen Yuan, Andrew Owens. "*Touch and Go: Learning from Human-Collected Vision and Touch.*" **NeurIPS**, 2022.

- Fengyu Yang*, **Chenyang Ma***. "*Sparse and Complete Latent Organization for Geospatial Semantic Segmentation.*" **CVPR**, 2022.

RESEARCH / INTERNSHIP EXPERIENCES

Zero-Shot Task Hallucination | PhD Student   Oct 2023 – Present

Cyber Physical Systems, University of Oxford   *Advisors: Andrew Markham & Niki Trigoni*
- Proposed zero-shot task hallucination — the capability for models to discover and propose possible tasks and plans of execution given a single image
- Devised a plug-and-play framework that leverages large pretrained VLM and 3D reconstruction model, combining with traditional path planning algorithms to provide geometric-aware trajectories for diverse tasks
- Showed our model can convert these task plans into human-interpretable formats such as videos for various potential applications, supported by extensive experiments

Federated Learning-XGBoost | Research Intern   Oct 2022 – July 2023

Flower Labs & CaMLSys, University of Cambridge   *Advisors: Nicholas Lane &* Daniel Beutel
- Developed the first privacy-preserving framework for federated XGBoost under horizontal federated learning setting that does not depend on the sharing of gradients and hessians, which leads to serious privacy concerns
- Proposed a novel method to transform the tree ensembles built by local clients as inputs to neural networks to learn robust learning rate strategies
- Achieved performances comparable to state-of-the-art accuracies on benchmark classification and regression datasets including a9a, cod-rna, and higgs

Visual-Tactile Multimodal Dataset | Research Assistant   July 2021 – Sept 2022

Owens Lab, University of Michigan   *Advisors: Andrew Owens & Wenzhen Yuan*
- Established Touch and Go — a human-collected visual-tactile dataset with 4000 different real-world objects, 14 hours of videos, and 13,900 touches which enables researchers to study diverse visual-tactile learning applications beyond the robotics-centric domains. Applied our dataset on multimodal learning tasks as follows
- Learned tactile features through self-supervised learning by training a model to associate images with touch. Experiments demonstrated that learned features significantly outperform supervised ImageNet features on a robotic manipulation task, and on recognizing materials in our dataset
- Proposed and applied our dataset on novel task of tactile-driven image stylization (i.e., making the visual appearance of an object more consistent with a given tactile signal)

- Studied multimodal models for future touch prediction by predicting future frames of a touch sensor's recording given both visual and tactile signals. Experiments showed that visual information improves these predictions over touch alone

Geospatial Semantic Segmentation | Independent Researcher   Jan 2021 – Feb 2022
- Conducted research on semantic segmentation for remote sensing images by alleviating large intra-class variance in both foreground and background classes
- Constructed a sparse and complete latent structure via prototypes to tackle the above issues by designing a prototypical contrastive learning strategy and modeling all foreground and hardest background objects
- Designed a novel patch shuffle augmentation to encourage the semantic information of an object to be correlated only to the limited context within the patch that is specific to its category
- Outperformed state-of-art methods by evaluating model on iSAID dataset

Venous Thromboembolism (VTE) Patient Monitoring & Alert System | Research Intern   Feb 2021 – July 2021
PerkinElmer Department of Informatics
- Researched and developed a real time patient monitoring and alert system for patients who are at risk of being diagnosed with VTE using Spotfire developed by TIBCO Software Inc.
- Extracted keywords from patients Electronic Health Records using transformer-based models to score patients by Padua, Wells, Geneva, and PESI criteria
- System was tested in Shanghai Sixth People's Hospital. Successfully spotted and saved an average of 30% of patients per month

ACADEMIC SERVICES

- **Reviewer:** CVPR (2023), NeurIPS Track on Datasets and Benchmarks (2022)
- **Teaching Assistant:** Machine Learning (2023), Deep Learning in Healthcare (2024)

HONORS & AWARDS

- **Summa Cum Laude**, College of Engineering, University of Michigan   2022
- **James B. Angell Scholar**, College of Engineering, University of Michigan   2021
- **Dean's List**, College of Engineering, University of Michigan   2019-2022
- **University Honors**, University of Michigan   2019-2022
- **Engineering Honors Program Alumni**, College of Engineering, University of Michigan

EXTRACURRICULAR

Diving, PADI, Professional Association of Diving Instructors
- Awarded Advanced Open Water Diver license (2016)
- Awarded Junior Open Water Diver license (2014)