Thomas P. Zeng

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Education

Carleton College — Northfield, MN
B.A. in CS and Math, GPA: 3.88/4.00 — 2019–Current

Research Interests

Creation of **robust**, **fair** and **explainable** deep learning models for NLP and Vision tasks.

Experience

Carleton College — Northfield, MN
CS Capstone Research advised by Professor Anna Rafferty — Fall 2022

- Evaluated and Created Counterfactually Fair classifiers for the language toxicity task
- Focused on reproducibility and robustness of counterfactually fair training methods
- Showed that methods such as Counterfactual Logit Pairing were robust

DePaul University — Chicago, IL
Research Intern at the Medical Informatics Laboratory (MedIX REU Program) — Summer 2022

- Focused on making Deep Learning Computer Aided Diagnosis algorithms for lung nodule malignancy classification robust to distribution shift
- Stratified CT images of malignant lung nodules using supervised and unsupervised methods
- Trained and evaluated ResNet classifiers against distribution shift in identified stratifications
- Wrote a paper that was accepted at the SPIE Medical Imaging conference.

Carleton College — Northfield, MN
Student Researcher with Professor David Liben-Nowell — Winter 2021-Current

- Used Choice Modeling to discover underlying patterns about how people choose
- Built various models based on different assumptions trained on a ground-truthless dataset of human rankings of American states
- Compared model results to quantify the effect of geographic location on people's choices

SayKid — Minneapolis, MN
Software Developer Intern — Winter 2021

- Interned at a startup that uses pre-built speech recognition models to create voice-interactive robots for children
- Deployed a Voice-Interactive Riddles Game for kids using Speech Recognition
- Developed game using Alexa Skills kit API and Voiceflow
- Worked on ensuring accessibility and robustness of the game logic

Publications

[1] **T. Zeng**, E. Furst, Y. Wang, R. Tchoua, J. Furst, and D. Raicu, "No nodule left behind: Evaluating lung nodule malignancy classification with different stratification schemes", *SPIE Medical Imaging*, accepted, 2023.

Note: Preprint draft can be viewed at github.com/mtzig/LIDC_GDRO/tree/main/Paper.

Teaching

- **Teaching Assistant** — Fall 2022, Winter 2023, Spring 2023
  Computability and Complexity (CS 254)
- **Teaching Assistant** — Winter 2022
  Programming Languages (CS 251)
- **Lab Assistant & Grader** — Fall 2021, Spring 2022
  Data Structures (CS 201)

Extracurricular Activities

- Data Science Club — 2019–Current
  Ran introductory workshops on Machine Learning and Deep Learning
- Carleton Language Center — 2019–2021
  Part of the Planning Committee and maintained the Language Center website

Skills

- **Languages:** Python, Java, C, HTML/CSS/JS
- **Framework/Tools:** PyTorch, Pandas, git, LaTeX
- **Natural Languages:** Mandarin Chinese (fluent), Japanese (Intermediate), French (Basic)