Zilin Wang

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EDUCATION

UNIVERSITY OF MICHIGAN | GPA: 4.00/4.00 August 2021 – May 2023(expected)
M.S. Computer Science & Engineering Ann Arbor, MI

THE OHIO STATE UNIVERSITY | GPA: 3.947/4.00 August 2017 - May 2021
B.S. Computer Science & Engineering (AI track), Summa Cum Laude Columbus, OH

PROFESSIONAL EXPERIENCE

Genentech/Roche May 2022 – August 2022(expected)

Imaging Science Intern, Data Analytics & Information, Personalized Healthcare

- Manager: Dr. Acner Camino Ann Arbor, MI
- Developing deep learning algorithms for OCTA image segmentation where the data is from multiple different distributions(scanners) and only has noisy partial annotations.

Michigan Medicine November 2021 – Present

Research Assistant, C. Galban Lab

- Advisor: Dr. Sundaresh Ram, Dr. Craig J. Galban Ann Arbor, MI
- Developing deep learning algorithms for 3D CT scan segmentation where each scan has ~125 million pixels and only a few cases are fully labeled.

Hunan Infopass Information Technology Co. Ltd. June 2018 - August 2018
Intern, Technology Department, Intelligent Transportation Systems for Changsha and Wuhan Changsha, China

- Trained a MCNN model for estimating crowding levels from cameras in subway trains in two of China's provincial capitals.
- Tested suitability of images from the train's surveillance cameras for the training dataset by writing test-runs in Python.

RESEARCH PROJECTS

Medical Image Analysis

Pulmonary Artery-Vein Segmentation in 3D Computed Tomography Images January 2022 – Present
Advisor: Dr. Sundaresh Ram, Dr. Craig J. Galban

- Given pulmonary 3D CT scans, we extract vessels and distinguish between arteries and veins that are visually similar to each other.
- Taking advantage of sparsity, we propose a novel GAN that can efficiently process CT scans of resolution ~500^3 and is able to be trained with partially labeled data.

Inspecting Ultrasound Image of Unborn Fetus by Deep Learning Integrated System May 2021 – July 2021
Supervisor: Prof. Ningbo Zhu

- Given ultrasound images of 41 different parts of unborn fetus, we design and train a fine-grained classifier and object detectors (yolov5).
- Proposed a post-processing step that enables spatial reasoning to accurately assess the imaging quality.

Adaptive Optics-Scanning Laser Ophthalmoscopy Image Analysis Using Deep Learning January 2021 – April 2021
Faculty Leader: Prof. Rajiv Ramnath

- Given retinal AO-SLO images, we present AI based solutions to detect cones/rods from them.
- Experimented with different variants of semantic segmentation techniques, and also adopted object detection techniques.

Computer Vision / Machine Learning

Transferring Inductive Bias through Leveled Knowledge Distillation January 2022 – April 2022
Advisor: Prof. Honglak Lee

- Demonstrated that CNN's translational equivariance can be partially picked up by a simple MLP through knowledge distillation.
- Proposed two new approaches to further improve the transfer of translational equivariance inductive bias.

External Wrench Recovery Using Visual-Tactile Sensors for Robotics Manipulation September 2021 – December 2021
Advisor: Prof. David Fouhey

- Built the first dataset of images from visual-tactile sensors, and they are labeled by the wrench applied to them at the time.
- Presented an effective algorithm that uses optical flow to estimate external wrench from images taken by visual-tactile sensors.

Verifying the Learnability of Bounded-Convex-Lipschitz Problem November 2020 – December 2020
Advisor: Prof. Raef Bassily

- Given two scenarios of different domain and feature space, we implemented stochastic gradient descent algorithm for logistic regression.
- Analyzed the M-bound and ρ-Lipschitz of each scenario, and proved the estimate of expected excess risk is up bounded.

TEACHING

Instructional Aide, SI670 - Applied Machine Learning, University of Michigan Fall 2021

- Instructor: Prof. Kevyn Collins-Thompson Ann Arbor, MI

Grader, CSE3521/5521 - Introduction to Artificial Intelligence, The Ohio State University Spring 2020

- Instructor: Dr. Prashant Serai Columbus, OH

SELECTED COURSES

- University of Michigan: Deep Learning for Computer Vision; Advanced Topics in Computer Vision, Machine Learning, Matrix Methods for Signal Processing and Machine Learning
- The Ohio State University: Neural Networks, Machine Learning, Speech & Language Processing, Knowledge Systems, Data Mining

Skills & Certifications

- Math & Statistics: Multivariate Calculus, Advanced Linear Algebra; Probability and Random Process, Engineering Statistics, Ordinary and Partial Differential Equations, Higher Mathematics
- Programming languages: Python, Java, C/C++, Julia, MATLAB, JavaScript, Scheme, SQL, Ruby
- CITI program certification: Responsible Conduct of Research (biomedical), Human Subjects Protection (biomedical)
- Languages: English (fluent, TOEFL MyBest scores 109), Mandarin (native)