

# Zilin Wang

email: zilinwan@umich.edu | phone: 614-286-0835 | webpage: wayne2wang.github.io

## EDUCATION

### UNIVERSITY OF MICHIGAN | GPA: 4.00/4.00

M.S. Computer Science & Engineering

August 2021 – May 2023(expected)

Ann Arbor, MI

### THE OHIO STATE UNIVERSITY | GPA: 3.947/4.00

B.S. Computer Science & Engineering (AI track), Summa Cum Laude

August 2017 - May 2021

Columbus, OH

## PROFESSIONAL EXPERIENCE

### Genentech/Roche

May 2022 – August 2022

*Imaging Science Intern, Data Analytics & Imaging, Personalized Healthcare*

South San Francisco (Remote)

- Manager: Dr. Acner Camino
- 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*

Ann Arbor, MI

- Advisor: Dr. Sundaresh Ram, Dr. Craig J. Galban
- 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  $\sim 500^3$  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

*EECS545: Machine Learning, 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

*EECS542: Advanced Topics in Computer Vision, 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

*CSE5523: Machine Learning, 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  $\rho$ -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)