

Zhengru (James) Fang

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EDUCATION

University of Illinois, Urbana-Champaign

GPA: 4.0/4.0

Master of Computer Science, Grainger College of Engineering

Jan 2024 – May 2025

Bachelor of Science in Computer Science, Grainger College of Engineering

Sept 2021 – May 2023

- Related Coursework: Algorithms & Models of Computation, Data Structures, Database Systems, Machine Learning, Natural Language Processing, Intelligent Agents, Distributed Information Systems

TECHNICAL SKILLS

Languages: Python, Java, C, C++, HTML/CSS (Bootstrap), JavaScript, Haskell, Linux Shell

Libraries & Frameworks: Git/Github, FastAI, MonAI, Albumentations, OpenCV, Pytorch, Tensorflow, NumPy, SciPy, React, Jupyter Notebook, AWS, Kubernetes, Docker, MongoDB, SQL, Flask

Skills: Deep Learning, Machine Learning, Computer Vision, Natural Language Processing, Web Development

EXPERIENCE

Data Science Intern

Aug 2023 – Oct 2023

AbbVie Pharmacology/Toxicology Team

- Developed deep learning, computer vision workflows for 24/7, real-time behavioral monitoring of experimental rats

Computer Vision Researcher

Feb 2022 – Aug 2022

Caesar & Dilger Animal Sciences Laboratory, University of Illinois

- Developed novel deep learning pig brain segmentation models to facilitate easier animal brain health research, such as automated measurement of brain volume with 3D segmentation
- Designed U-Net segmentation models and optimized (with superconvergence training & parallelization) to increase segmentation accuracy to 94.2% while cutting training time by 75%

Machine Learning Intern

June 2020 – May 2021

New York University Langone Medical Center

- Collaborated with Dr. Aristotelis Tsirigos, chair of bioinformatics at NYU, and 2 postdoctoral assistants on pan-cancer mutation detection from histopathology slides with convolutional neural networks
- Built state-of-the-art models for detecting 20+ cancer mutations with multi-task training with EfficientNet
- Cut mutation detection time from a week with lab tests to 6 hours with trained detection model
- Trained models on supercomputing clusters with 20,000+ histopathology slides and 4M+ tiled images

Machine Learning Researcher

June 2018 – Aug 2019

Gordon and Leslie Diamond Center, Vancouver General Hospital

- Built a deep learning model to detect kidney transplant complications with LSTM recurrent neural networks with Dr. Christopher Ngan
- Reached 85% accuracy and enabled real-time prediction of complications based on patient biometric statistics

PUBLICATIONS

Senthil, Pradeep, Zhengru Fang, Loretta Sutkus, and Ryan Dilger. "Brain Segmentation from MRI Images Using Convolutional Neural Networks for the Domestic Pig." in *Swine in Biomed. Rsrch Conf. 2022*. Madison, WI, June 2022.

TECHNICAL PROJECTS

Schedule Generator & Advisor Chatbot | Python, RegEx, JSON, React JS, Tailwind CSS

May 2022 – Present

- Built NLP-based advising chatbot allowing students to ask questions 24/7
- "Greedy" schedule generator for students that builds a schedule based on priority from class prerequisites chain
- Schedule generator is customized to individual parameters such as AP/IB exam credit, balance between major classes and general education requirements, and maximum credit-hour load

ML Cardiovascular Arrhythmia Detection | FastAI, PyTorch, HTML/CSS, JS, Flask

Sep 2019 – Aug 2020

- Developed a detection model, heartbeat model-focused areas visualizer, ensembled model, and web application
- Overall accuracy at 99.5% after ensembling five classification models, with false positive rate reduced by 53% and false negative rate reduced by 95%
- Converted heartbeat signals to gradient images to take advantage of pretrained 2D convolutional neural networks