Yigao Fang

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EDUCATION

University of Pennsylvania **Philadelphia, PA**

- Master of Science in Engineering, Data Science | Computer and Information Science Department *Dec. 2023 (Expected)*
- *Coursework*: Web Developing, Big Data Analytics, Statistics for Data Science

University of Michigan (UM) **Ann Arbor, MI**

- Bachelor of Science in Engineering, **Computer Science** | Minor. Mathematics **GPA**: 3.98/4.00 *May 2022*
- *Coursework*: Software Engineering, Data Structures, Algorithms, Operating Systems, Database Management, Machine Learning, Parallel Programming with GPUs, Game Design and Development, Computer Vision, Linear Programming, Numerical Methods

Shanghai Jiao Tong University (SJTU) **Shanghai, China**

- Bachelor of Science in Engineering, Electrical and Computer Engineering (ECE) **GPA**: 3.84/4.00 *Aug. 2022*
- *Scholarships*: China National Scholarship, Lums Scholarship, Yu Liming Scholarship

TECHNICAL SKILLS

Programming: Python (pandas, PyTorch, OpenCV, scikit-learn, gurobipy), Java, C++, JavaScript, SQL, HTML, CSS, C#, C

Framework and Tools: React, API, MATLAB, TensorFlow, Linux, Git, LaTeX, CUDA, Jupyter Notebook, R Studio, Jira

SOFTWARE ENGINEERING EXPERIENCE

Full Stack Developing Research Internship: Shanghai Jiao Tong University *May 2022 – Aug. 2022*

- Founded a platform that predicts the force and energy of a catalyst using artificial intelligence with **Mean Avg. Error < 0.30 eV**.
- Innovated a **Colab** pipeline that preprocesses the **ASE** dataset and improves the **GemNet** model by adding 4 embedding layers.
- Architected the Back End with **Python** that imports catalyst structures as input and trains on 2 million data points.

Software Developing Research Internship: Peisen's Lab *May 2021 – Sep. 2021*

- Realized an innovative VR system based on computer vision and simulated the player movement with **deviation < 0.1 mm**.
- Generated a 256 * 256 binary graph based on **de Bruijn** to provide a unique pattern for each 2-dimension position.
- Employed **OpenCV** with **Python** to calculate the real-time 6 degrees of freedom coordinates of the VR helmet based on the 24-frame video clips captured by the onboard camera, and imported the position indexes into **Unity**.

SELECTED PROJECTS

3D Adventure Game: Asylum 7 (www-personal.umich.edu/~fgsepter/Asylum7(Web)2/) *Feb. 2022 – Apr. 2022*

- Led a team of five and published a first-person adventure game with 6 scenes based on **Unity** and **C#**.
- Spearheaded the game's core mechanisms with **Coroutine**, such as scene transitions and player movement, and trap controls.
- Managed the 3-stage (alpha, beta, gold) **iterative process** on **Jira** and **GitHub**, following design, implementation, and test circles.

Operating Systems Implementation (https://github.com/fgsepter/OSimpl) *Jan. 2022 – Apr. 2022*

- Utilized **C++** to implement **threads** and monitors (**mutex** and **conditional variable**) on uniprocessor and multiprocessor systems.
- Conceptualized states diagram and clock algorithm to develop a **pager** that manages application processes' virtual address space.
- Simulated a **multi-threaded** network file system that connects between server and client sides using **sockets**.

Birdcall Soundscape Classification (www.kaggle.com/competitions/birdclef-2021) *Apr. 2021 – Jun. 2021*

- Preprocessed the audio dataset of **62.9K** birdcalls and conveyed them into trainable spectrum maps using **librosa** with **Python**.
- Strengthened **DenseNet-121** convolutional neural network (**CNN**) and visualized the prediction result with **F1-score = 64.49**.

Intention Estimation for Autonomous Driving (gitlab.eecs.umich.edu/xsh/eecs442_pj) *Feb. 2021 – May. 2021*

- Transformed the **res-Net18** model into **PyTorch** Recurrent Neural Network (**RNN**) pipelines by adding drop-out layers followed by fully connected layers to match **LSTM** cells, and estimated pedestrians' crossing-road intention with accuracy up to **77.5%**.
- Applied **OpenCV** Multiple Object Tracking (**MOT**) to extract 3 * 128 * 128 images for pedestrian from high-resolution **PIE** dataset.

LEADERSHIP AND ADDITIONAL EXPERIENCE

Leadership: *Department Minister*, UM-SJTU Joint Institute Student Union; *Club President*, Monach Drama Troupe at SJTU

Coding Competitions: *Golden Medal*, University Physics Competition; *Meritorious Winner*, Mathematical Contest in Modeling

Teaching Assistant: VP 160 Honors Physics & VE 230 Electromagnetics, *Shanghai Jiao Tong University*

Teaching Assistant: EECS498/598 - 008, Deep Learning for Vision, *University of Michigan*