

SHENGAN ZHANG

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shenganzhang.github.io

EDUCATION

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

College of Engineering (CoE)

B.S.E in Computer Science, Minor in Mathematics

Expected May 2021

Cumulative GPA: 3.95 / 4.0

Shanghai Jiao Tong University (SJTU), Shanghai, China

University of Michigan – Shanghai Jiao Tong University Joint Institute (UM – SJTU JI)

B.S in Electrical and Computer Engineering

Expected August 2021

Cumulative GPA: 3.71 / 4.0, Rank: 35/253

RESEARCH PROJECTS

Data Elements from Video using Impartial Algorithm Tools for Extraction

May 2020 – Present

Supervised by Dr. Carol Flannagan, Ann Arbor, MI

- Developed and tested algorithms to detect the position of hand primitive in vehicle-monitoring videos, which would be a baseline component for next-stage cell phone usage detection algorithm.
- Reduced misdetection of hand position in cabin-view videos by implementing a background-removal algorithm based on Optical Flow masking.
- Reimplemented the User Interface for a labeling software with PyQt5, which adopted a tree structure to indicate the relationship between objects in video frames and let to better labeling experience.
- Tested on SHRP2 and ORNL dataset the generalizability of a Kinetics-I3D Convolutional Neural Network model, which was retrained on IVBSS dataset.
- Trained 3D ConvNet model on face-view vehicle-monitoring videos, cooperated with a peer researcher to compare the results with the model's performance on cabin-view videos and analyzed the features extracted by the model.
- Submitted a paper with a peer researcher on cell-phone-related driver behaviors detection.

Data Augmentation based on Invariant Transform Experience Replay

May 2020 – August 2020

Supervised by Dr. Paul Weng, Dr. Matthieu Zimmer, Shanghai

- Self-learned Deep Reinforcement Learning (RL) theory.
- Tested the original RL data augmentation method, which made symmetries of multi-task robot manipulator's trajectories and targets, with DDPG model on tasks from OpenAI Gym.
- Proposed a method of randomly sampling reflection angles and choosing best angles based on the temporal difference errors of the corresponding symmetric trajectories to enhance the effectiveness of data augmentation.

Analyzer of Leg Movement Based on Wireless Transmission

June 2018 – November 2019

Supervised by Dr. Guohua Shu, Shanghai

- Co-developed algorithms leading to real-time leg movement visualization based on MPU-6050 acceleration sensors and STM-32 board.
- Preprocessed acceleration data to eliminate noise and designed algorithm to simulate the trajectory of leg with these data in MATLAB.

LEADERSHIP

UM - SJTU JI Student Union (JISU), Vice President of the Presidium

June 2018 – June 2019

Took the overall responsibility of JISU and lead all the departments to hold events such as sports competitions, town hall meeting and career orientation to improve JI students' life.

HONORS & AWARDS

UM CoE Dean's List, University Honors	January 2020
The Dean's Honor List recognizes UM students that have 3.5 GPA or better for the term.	
Tang Junyuan UM – SJTU JI Scholarship	August 2019
The scholarship of the highest level in UM – SJTU JI (Top 1% in UM – SJTU JI).	
China National Scholarship	November 2018
The scholarship of the highest level in China (Top 0.2% in China).	
A-level Excellent Undergraduate Scholarship	November 2018
This is to award SJTU students for excellent academic performances (Top 1% in UM – SJTU JI).	
Shanghai Jiao Tong University Outstanding Student	October 2018
This scholarship recognizes students of outstanding overall performance.	
John Wu & Jane Sun Talent Scholarship of UM-SJTU JI	September 2017
This is to award JI students with high scholastic standing (Top 10% in UM – SJTU JI).	

COURSE EXPERIENCES

EECS 498 Deep Learning for Computer Vision	September 2020 – December 2020
<i>Offered by Dr. Justin Johnson, Ann Arbor, MI</i>	
<ul style="list-style-type: none">Implemented an image captioning model based on RNN, LSTM and Attention mechanism.Built an anchor-based single-stage object detector similar to YOLO and a two-stage object detector, similar to Faster R-CNN, that combined a region proposal network with a recognition network.Developed two different kinds of generative models: Variational Autoencoders and Generative Adversarial Networks.	
EECS 445 Introduction to Machine Learning	January 2020 – April 2020
<i>Offered by Dr. Sindhu Kutty, Ann Arbor, MI</i>	
<ul style="list-style-type: none">Built a text classifier based on RBF-kernel SVM and ran fine-tuning.Designed an image classifier based on CNN with data augmentation and fractional-max-pooling.	
EECS 482 Introduction to Operating Systems, Advanced Version	January 2020 – April 2020
<i>Offered by Dr. Harsha V. Madhyastha, Ann Arbor, MI</i>	
<ul style="list-style-type: none">Built a thread library to support multi-threaded programming for both uniprocessor and multiprocessor systems.Implemented a pager to manage application processes' virtual address spaces.Developed a multi-threaded network server for file management in client-server systems.	

EXTRACURRICULAR ACTIVITIES

VG 100 Introduction to Engineering, Teaching Assistant	May 2020 – August 2020
<i>Offered by Dr. Manuel Charlemagne, Dr. Michelle Campbell, Shanghai</i>	
<ul style="list-style-type: none">Cooperated with other teaching assistants to grade assignments and provided feedback to students.Held office hours to help students perform better and learn more efficiently.Collected students' ideas and provided them for the instructors to improve this course.	
SJTU Student & Alumni Association at UM, Core Member	September 2019 – Present
<ul style="list-style-type: none">Worked with both universities as well as industry partners to provide professional development resources, culture immersion programs, and networking opportunities.Held activities to make connection between UM and SJTU students and alumni.	

SKILLS

Programming: C/C++, Python (Pytorch, OpenCV, PyQt5), MATLAB, HTML, CSS, LaTeX, Verilog
Platforms: Linux (Ubuntu), Windows, Arduino Uno, Xilinx FPGA
Language: English (fluent), Chinese (native)