Mingqian Liao

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Personal Profile

I am a junior at the Southern University of Science and Technology (SUSTech), majoring in Computer Science and Technology, and studying in the Turing class of my major. I am currently on an exchange program at the University of California, Berkeley, from January to May of this year, during which I took **graduate computer vision, deep learning, machine learning, and operating system,and I am looking for a phd position in computer vision and machine learning field after getting my bachelors degree**. My goal is to apply my machine learning skills and knowledge to contribute to cutting-edge research in the field.

I have a strong interest in computer vision and machine learning, and I have been working in our iMED lab for a year to study the application of machine learning and computer vision to medical imaging processing. **As a proactive and dedicated researcher, I led my group to achieve A's in both semesters of the research course, which was recognized by the professors**. Besides, I have also represented my university and achieved good results in the international supercomputing competitions of HPC-AI and ASC22.

My overall GPA is 3.74/4, my sophomore GPA is 3.83/4 and my junior GPA is 3.94/4. I have completed almost all the major courses required for graduation and **earned A and A+ in Machine Learning, Probability and Mathematical Statistics, Software Engineering and Computer Operating Systems, etc**. I have also been a student assistant for two semesters in C/C++ Programming and Computer Networks. My skills include proficiency in programming languages such as Python, Java, and C++, as well as experience in deep learning frameworks such as PyTorch.

Education

University of California, Berkeley — *Berkeley, USA*

Visiting Student — *Jan 2023 - Current*

- **Courses:** Machine Learning, Deep Learning, Graduate Computer Vision, Operating System

Southern University of Science and Technology — *Shenzhen, China*

Turing Class, Junior Undergraduate — *Sept 2020 - Current*

- 2nd Prize in SUSTech Excellent Student Scholarship
- Distinguished Student Assistant
- **Courses:** Machine Learning, Artificial Intelligence, Compilers, Operating Systems, Computer Network, Computer Organization, Software Engineering, Data Structure, Probability and Mathematical Statistics, Algorithm Design, C/C++ Program Design, Introduction to Artificial Intelligence

Experience

iMED Lab in Southern University of Science and Technology — *Shenzhen, China*

Research Student — *Jul 2021 - Current*

- Collaborated with a three-person team on the topic of unsupervised fundus surgical depth estimation based on microscopic surgical videos

Student Supercomputing Club of Southern University of Science and Technology — *Shenzhen, China*

Officer member — *Jan 2022 - Current*

- Organize the university-level supercomputing competitions
- Recruit new students for club
- Select students to represent the university in supercomputing competitions with us

Southern University of Science and Technology — *Shenzhen, China*

Student Assistant in CS305 Computer Network course — *Sep 2022 - Feb 2023*

- Checking Lab exercises, and answering questions from students in class and after class
- Designing and grading Assignments for the course

Southern University of Science and Technology — *Shenzhen, China*

Student Assistant in CS205 C/C++ Program Design course — *Feb 2022 - Feb 2023*

- Checking Lab exercises, and answering questions from students in class and after class.
- Designing and grading Assignments for the course

Projects

Unsupervised Bottom-of-the-eye Surgical Depth Estimation Based on Microscopic Surgical Videos — *Shenzhen, China*

iMED lab in Southern University of Science and Technology — *Jan 2022 - Current*

- Build a virtual surgical instrument and fundus database
- Conduct a series of experiments and optimizations to migrate the model in the self-driving depth prediction scene into the surgical scene
- Try to design a model to output the corresponding depth video from the input fundus surgery video

Digging deeper into the value of Wordle through time series analysis and natural language processing — *China*

MCM 2023 — *Feb 2023*

- Build time series models to explain changes in the number of active Wordel players and predict future trends
- Establish a probabilistic regression model of the distribution of guessing times to analyze the difficulty of Wordle games
- Use clustering algorithms to grade the difficulty of the game, and combine natural language processing techniques to build a classification model from the puzzle to infer the difficulty rating of the game

Deep-Learning-Based DNA Fast Decoding — *Singapore*

HPC-AI Advisory Council, National Supercomputing Centre (NSCC) Singapore, and National Computational Infrastructure (NCI) Australia — *Jan 2022 - Nov 2022*

- Design a model to predict transcription factor's binding site based on the input DNA sequence and DNase-sequence
- Improve the model using the key part of UNet and Leopard and use horovod to train the network distributedly

Neural Network for self-driving data augmentation — *Shenzhen, China*

Southern University of Science and Technology — *Nov 2022 - Jan 2022*

- Augment the automated driving dataset using the Stable Diffusion model as well as the Textual Inversion model
- Conduct experiments on the prompt to guide the direction of augmentation, and on the sampling method to augment

Intelligent identification of ancient glass objects given statistical machine semester under small sample size — *China*

CUMCM 2022 — *Sep 2022*

- Build a cardinality test and decision tree to explore the relationship between the weather ability of ancient glass objects and their properties
- Establish a probabilistic regression model of the distribution of guessing times to analyze the difficulty of Wordle games
- Identifying Significant Changes in Composition of Lead-Barium Glass and High Potassium Glass Before and After Weathering Using KS Test
- Construct regression models using semi-supervised learning to infer the chemical composition of a given glass artifact before weathering

Matrix Class and CNN forward propagation Implementation in C++ — *Shenzhen, China*

Southern University of Science and Technology — *Sep 2021 - Dec 2021*

- Build a relatively complete calculation library by referring to the Class cv::Mat in OpenCV
- Support matrix of different basic data types
- Implement the region of interest (ROI) to avoid hard copying of memory
- Implement a CNN model that can predict if the input image is a person (upper body only) or not
- Conduct a Series of performance tests, comparisons and optimizations carried out on the X86 and ARM platforms

Honors & Awards

2023	**Distinguished Student Assistant**, Student Assistant in Computer Network	*SUSTech*
2022	**Huawei "Intelligent Pedestal" Industry-Education Integration Collaborative Education Project Scholarship**, Excel in Machine Learning course	*Shenzhen*
2022	**Huawei "Intelligent Pedestal" Industry-Education Integration Collaborative Education Project Scholarship**, Excel in C/C++ Program Design course	*Shenzhen*
2022	**First Prize**, ASC Student Supercompute Challenge	*Asia Supercomputer Community*
2022	**Second Place**, 2022 APAC HPC-AI Competition	*Singapore*
2022	**Special Prize**, The 9th "League Cup" Undergraduate English Writing Contest	*Guangdong Province*
2022	**The 2nd prize**, SUSTech Excellent Student Scholarship	*SUSTech*
2022	**The 3rd prize**, Mathematical Contest in Modeling	*COMAP*
2021	**The 3rd prize**, SUSTech Excellent Student Scholarship	*SUSTech*
2020	**Special Prize**, Freshman Scholarship, ranked 2/1097 among all the freshmen	*SUSTech*

Skills

Programming Python(Numpy, Pytorch), C/C++, Java, SQL, Vue2

Soft Skills Teamwork, Time Management, Documentation, Presentation