

# Mingqian Liao

SUSTech, China

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

## Skills

<b>Programming</b>	Python(Numpy, Pytorch), C/C++, Java, SQL, Vue2
<b>Soft Skills</b>	Teamwork, Time Management, Documentation, Presentation