

# Li Liu

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Available from mid-June to mid-September 2024

## EDUCATION

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### University of California, Santa Cruz

*Ph.D. student in Computer Science and Engineering, advisor: Prof. Leilani Gilpin*

Santa Cruz, USA

*Sept. 2022 – Present*

### Zhejiang University

*Master student of Control Science and Engineering*

Hangzhou, China

*Sept. 2019 – Mar. 2022*

### Zhejiang University

*Bachelor of Landscape Gardening, Chu Kochen Honors College*

Hangzhou, China

*Sept. 2015 – Jun. 2019*

## RESEARCH INTERESTS

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Machine Learning Applications, Explainable AI, Multi-modality Computing, Visualization and Interactive Design

## PROJECTS

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### Autonomous Driving Status Detection Project

- Designed and implemented a comprehensive multi-stage analysis pipeline for autonomous driving status detection.
- Overcame sparsity challenges with real-world production data.

### CPSC: An efficient framework for processing high-dimensional data

- Developed a novel conformal predictor: conformal prediction with shrunken centroids (CPSC).
- Achieved higher efficiency when processing noised and high-dimensional data compared with existing methods.

### A Tri-light Warning System for Hospitalized COVID-19 Patients

- Facilitated the patient stratification using multi-modality data (Clinical, CT, Medical record).
- Data mining and cleaning from raw medical records.
- Built a tri-light warning system that provides trustworthy outcomes.

## INTERNSHIP/RESEARCH EXPERIENCE

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### Nissan Research Center

*Data Scientist Intern*

Santa Clara, USA

*July. 2023 – Sept.2023*

- Addressed challenges with real-scenario data: limited production data, skewed data distribution, and low-resolution sampling rate.
- Develop multi-scale feature engineering with temporal data.

### UC Santa Cruz

*Graduate Student Researcher*

Santa Cruz, USA

*Sept. 2022 – Now*

- Developed a framework to detect and interpret the dangers in autonomous driving scenarios.
- Improve the explainability of vision-language models to assist visually impaired groups.

## SKILLS

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**Coding languages:** Python, C, C#,Java, Matlab, Jupyter, PyTorch

**Visual Design:** Drawing, Photoshop, Adobe Illustrator, InDesign, Auto-CAD, Rhino, Sketchup, Vary

**Video and Animation:** After Effect, Premier, Vegas, Blender

## PUBLICATIONS

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- [1] C. Xu, Q. Xu, **L. Liu\*** et al."A Tri-light Warning System for Hospitalized COVID-19 Patients: Credibility-based Risk Stratification under Data Shift". *Under Review* (2023)
- [2] Y Wang, Z Li, J Mei, Z Wei, **L Liu** et al."Swinmm: masked multi-view with swin transformers for 3d medical image segmentation". *MICCAI, 2023* (2023)
- [3] H Gao, S Zhao, H Li, **L Liu**, et al."Bimodal Fusion Network for Basic Taste Sensation Recognition from Electroencephalography and Electromyography". *ICASSP, 2023* (2023)
- [4] H Li, Y Liang, H Gao, **L Liu**, et al."Silent Speech Interface with Vocal Speaker Assistance Based on Convolution-augmented Transformer". *IEEE Transactions on Instrumentation and Measurement, 2023* (2023)
- [5] H Gao, S Zhao, H Li, **L Liu**, et al."Basic Taste Sensation Recognition from EEG Based on Multi-Scale Convolutional Neural Network with Residual Learning". *IEEE Transactions on Instrumentation and Measurement, 2023* (2023)
- [6] **L. Liu** et al."CPSC: Conformal prediction with shrunken centroids for efficient prediction reliability quantification and data augmentation, a case in alternative herbal medicine classification with electronic nose". *IEEE Transactions on Instrumentation and Measurement*. (2022)
- [7] H. Wang, X. Zhan, **L. Liu\*** et al."Unsupervised cross-user adaptation in taste sensation recognition based on surface electromyography with conformal prediction and domain regularized component analysis". *IEEE Transactions on Instrumentation and Measurement*. (2022)
- [8] Z.Li, **L.Liu** et al."Bag of Tricks for FGSM Adversarial Training". arxiv (2021)
- [9] **L. Liu** et al. "Boost AI Power: Data Augmentation Strategies with unlabelled Data and Conformal Prediction, a Case in Alternative Herbal Medicine Discrimination with Electronic Nose". *IEEE Sensors Journal*. (2021)
- [10] **L. Liu** et al."Classifying herbal medicine origins by temporal and spectral data mining of electronic nose ".arxiv (2021)
- [11] H. Wang, D. Lu, **L. Liu** et al."Quantitatively Recognizing Stimuli Intensity of Primary Taste Based on Surface Electromyography". *Sensors*. (2021)

\*: equal contribution

## TEACHING EXPERIENCE

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- TA for CSE 164 - Computer Vision, UCSC, 2023 Spring
- TA for CSE 30 - Programming Abstractions: Python, UCSC, 2023 Fall
- Mentor for Science Internship Program, UCSC, 2023 Summer
- Speaker for Stanford Summer Research Program, 2021 Summer

## ACHIEVEMENTS & HONORS

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Honored Graduate Award of Zhejiang Province, China	2022
China National Scholarship for graduate students (Overall 2% graduate students awarded);	2021
Alibaba Geek Scholarship;	2020
Dean Scholarship of Chu Kochen Honors College (10/1800 undergraduates awarded);	2019
Silver award of China College Students' "Internet+" Innovation and Entrepreneurship Competition (Top 0.01%);	2019
China National Scholarship (Overall 2% undergraduate students awarded);	2016