

Li Liu

Email: lliu112@ucsc.edu Home: leolee7.github.io/
Available from mid-June to mid-September 2024

EDUCATION

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

Machine Learning Applications, Computer Vision, Data Visualization and Interactive Design, Explainable AI

PROJECTS

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

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

- Evaluated the scalability of vision-language models with multi-source medical data.
- Investigated pre-train models, including Masked Auto-Encoder (MAE), Image-Text Contrastive Learning (CLIP), and Zero-shot Learning assisted by Large Language Models (LLM).

SKILLS

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

- [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

- 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

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