

# Li Liu

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## EDUCATION

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### University of California, Santa Cruz

*Ph.D. student in Computer Science and Engineering*

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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Applicable Machine Learning, Computer Vision, Data Mining, Interactive Design, Visualization

## PROJECTS

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

Aug. 2021 – Aug. 2022

- 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.

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

Mar. 2021 – Jan. 2022

- 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.

### Data augmentation strategies for electronic nose system

Jun. 2020 – Jan. 2021

- Improved the robustness of an e-nose system for herbal medicine classification.
- Developed a novel augmentation strategy based on conformal prediction, which outperformed other strategies.

## 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 by Journal of the American Medical Informatics Association*. (2023)

[2] **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)

[3] 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)

[4] Z. Li, **L. Liu** et al. "Bag of Tricks for FGSM Adversarial Training". arxiv (2021)

[5] **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)

[6] **L. Liu** et al. "Classifying herbal medicine origins by temporal and spectral data mining of electronic nose". arxiv (2021)

[7] H. Wang, D. Lu, **L. Liu** et al. "Quantitatively Recognizing Stimuli Intensity of Primary Taste Based on Surface Electromyography". *Sensors*. (2021)

\*: equal contribution

## SKILLS

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**Programming 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

**Language:** Mandarin, English(TOEFL 111)

## 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
Bronze Medal in the Hong Kong Contemporary Art Competition;	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
Runner up in The Chinese National Competition of Transport Science and Technology for Students;	2019
Ten Preeminent Students of College of Agriculture and Biotechnology, Zhejiang university(Top 1%);	2018
China National Scholarship (Overall 2% undergraduate students awarded);	2016

## INTERNSHIP/RESEARCH EXPERIENCE

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<b>UC Santa Cruz</b> <i>Graduate Student Researcher</i>	Santa Cruz, USA <i>Sept. 2022 – April.2023</i>
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- Implemented a joint training pipeline for multiple datasets.
- Evaluated the scalability of computer vision models with integrated medical data.
- Investigated the effectiveness of pre-training strategies, including Masked Auto-Encoder (MAE), Image-Text Contrastive Learning (CLIP), and Zero-shot Learning assisted by Large Language Models (LLM).

<b>Rotunbot Co., Lt.</b> <i>User Interface Design Intern</i>	Hangzhou, China <i>Sept. 2019 – Sept.2021</i>
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Interactive design, product advertising. User interface design and software development.

<b>Zhejiang University</b> <i>Undergraduate Research Program</i>	Hangzhou, China <i>Jan. 2019 – May.2019</i>
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- Designed a light-responsive pavilion and implemented a demo with Arduino.
- Video record of the light-response unit demo.
- Won 5+ international art/design competition awards.

## EXTRA-CURRICULAR EXPERIENCE

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<b>Intercultural Communications</b>	2018,2021
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- Seminar speaker in Stanford Summer Research Program, 2021, online
- Student representative of China in Asian Undergraduate Summit, 2019, Singapore
- Student participant of 53rd Annual Conference of the National Collegiate Honors Council, 2018, Boston, USA
- Exchange program in University of California Davis, 2018, Davis, USA
- Representative of student visitor to National University of Singapore, 2018, Singapore

<b>Science Popularization</b>	Nov. 2019 – Nov. 2021
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- Invited scholars to popularize scientific knowledge and scholarly experience.
- Supported by Alibaba Geek scholarship.
- Subscribed by 2500+ followers.