

Shengnan Liu

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Education: Graduate

University of California, Santa Barbara (UCSB)

Santa Barbara, California

Master of Science in Computer Science

Expected Graduation Time: June, 2026

Cumulative GPA: N/A

Education: Undergraduate

University of California, Santa Barbara (UCSB)

Santa Barbara, California

Bachelor of Science in Mathematics

Graduation Time: June, 2024

Minors: Statistics and Data Science; Spatial Science

Cumulative GPA: 3.76/4.00

Honor: UCSB College of Letters & Science Dean's Honors during Spring 2024, Winter 2024, Fall 2023, Fall 2022, Spring 2021, Winter 2021 Quarters

Skills

- Programming Languages: Python, JavaScript, C++, R, C, MATLAB
- Software Skills: PyCharm Community, VS Code, R-Studio, Jupyter Notebook, QGIS, Overleaf, MATLAB, etc.
- Language Skills: English, Chinese

Work Experience

EVE Energy Co., Ltd.

Huizhou, Guangdong, China

Analyst in Lean Lab, Engineer in Quality Research Office

July, 10th, 2023 – Sep., 12th, 2023

- Learnt to collect data on factory machines, built corresponding data frames in R-Studio, and analyzed the data
- Calculated the premium product yield rate and “monetary yield rate” to report whether each factory is in profit or loss based on given computing system, algorithms and datasets
- Developed a more accurate algorithm for “monetary yield rate” to more precisely assess the gains of factories
- Applied Excel formulas to calculate “continuous excellence date” of all manufacturing processes and used R-Studio to obtain the distribution of product deficiency amounts to report which processes need specialized improvements
- Participated in the optimization of Work In Process (WIP) management by offering algorithms and analysis
- Analyzed and optimized the raw material claiming rules in use
- Assisted working group members by recording information while they are busy with communicating with factory employees or by offering reminders and suggestions
- Offered suggestions on Excel form standardization, intact database construction, and corresponding data analysis

Research Experience

Research on the Minimum Label Spanning Tree Problem

Santa Barbara, California, USA

Subhash Suri, Distinguished Professor at University of California, Santa Barbara

October, 2024 – December, 2024

- Investigated the Minimum Label Spanning Tree (MLST) problem to minimize edge label diversity in spanning trees
- Deeply Analyzed 2 heuristics solutions, including a logarithmic performance-guaranteed algorithm, for approximating NP-hard MLST solutions
- Proved NP-hardness of MLST problems via reduction and established performance bounds for efficient solutions
- Leveraged Union-Find structures, integer linear programming, etc. for optimized spanning tree construction

Project Experience

Statistical Machine Learning (Individual Project)

Santa Barbara, California, USA

Katie Coburn, Lecturer at University of California, Santa Barbara

October, 2023 – December, 2023

- Chose Kaggle’s Spaceship Titanic Dataset, a twist on the classic Titanic competition, and decided the topic of prediction: which passengers on the ship went missing after the ship’s collision
- Conducted exploratory data analysis (EDA), data cleaning, and feature engineering
- Applied machine learning knowledge, including but not limited to classification and regression training, to develop models, such as random forest and gradient boosting machine, to predict which passengers were missing (transported to another dimension)

Biometric Indicators of Heart Failure (Group Project)

Santa Barbara, California, USA

Saad Mouti, Visiting Assistant Professor at University of California, Santa Barbara

April, 2023 – June, 2023

- Analyzed the dataset, visualized the distributions of variables in the dataset, and selected variables of interest for further statistical analysis in R-Studio
- Built simple linear regression model and conducted hypotheses testing as well as t-test in R-Studio
- Built multiple linear regression model, conducted F-test, and derived confidence and prediction intervals in R-Studio
- Performed Lasso and Ridge regression to test for collinearity between predictors in R-Studio
- Performed weighted least squares method to explore whether a model with a higher explainability could be built