

Hanbin Liu

Homepage: <https://hanbin-liu.github.io> Email: liuhanbin1023@gmail.com

EDUCATION

Southern University of Science and Technology, Shenzhen, China *Sept. 2019 - Present*
Major in Statistics

- GPA: 3.88/4.00 (ranking: 2/43, top5%)
- Courses with full marks: Advanced Linear Algebra II (H), Probability Theory, Mathematical Statistics, Computational Statistics

SKILLS

R, Python, MATLAB, Java, LaTeX

RESEARCH EXPERIENCE

Prof. Jicong Fan's Group (Clustering Algorithms) *July 2021 - Sept. 2021*
Research Intern *CUHK-Shenzhen, School of Data Science*

- Learned sparse subspace clustering (SSC) and selective sampling-based scalable sparse subspace clustering (S^5C). Derived the kernel version of S^5C for non-linear cases (KS^5C).
- Learned ADMM and cyclic coordinate descent algorithm. Solved LASSO problems in KS^5C by using the cyclic coordinate descent algorithm rather than ADMM.
- Simulation of KS^5C on datasets COIL-20, COIL-100, GTSRB, YaleBCrop025, and MNIST. [code]

Prof. Alice Cheng's Group (Content Analysis) *July 2021 - Aug. 2021*
(Remote) Undergraduate Research Program (GEARS) *NC State, Department of Communication*

- Analyzed the corpus using a quantitative content analysis method, where the corpus is Weibo posts related to the debate on COVID-19. Created a code sheet and coded the content. [poster]

SEMINAR

Biostatistics and Computational Statistics Seminar *Fall 2021*
Supervisor: Prof. Guo-Liang Tian

- Learned biostatistics with R. Learned the EM algorithm and its derivatives, QLB algorithm, and De Pierro algorithm.

PROJECT

Statistical Analysis of Short Video with R [code] [report] [slides] *Fall 2021*

- A linear model was used to perform regression analysis on the number of likes of short videos, and nonparametric methods were used to verify, such as permutation test and bootstrapping.
- Clustering and generative models based on the number of likes, comments, and shares, as well as a classification model using type as the label.

Data Mining Applications in DC Crime [code] [report] *Spring 2021*

- Data preprocessing, exploratory data analysis, and analysis of crimes over geography and time.
- Classifying (clustering) the geography by the crime events. Models include decision tree, KNN, random forest, AdaBoost, GBDT, K-means, and DBSCAN.

Self-contained Report on Discrete Mathematics [report] *Fall 2020*

- Stated the methods of solving linear recurrence relations in the language of linear algebra.

AWARDS & HONORS

- The 12th Chinese Mathematics Competitions (Provincial First Prize) *Dec. 2020*
- China National Encouragement Scholarship *Nov. 2020, 2021*

OTHERS

- My assignments of statistics major of SUSTech: <https://github.com/Hanbin-Liu/sustech-assign>