Shuang Chen
Mobile: (+86) 17834960456 Email: chensh0926@163.com

Education Background

BACHELOR OF SCIENCE IN STATISTICS **SEP.2020 – JUN.2024(expected)**
SCHOOL OF MATHEMATICS AND STATISTICS & CW CHU COLLEGE
JIANGSU NORMAL UNIVERSITY **JIANGSU, CHINA**

- Major: **Statistics**
- Overall **GPA: 90.4/100.0**, **Major GPA: 91.3/100.0**
- Related coursework: Mathematical Analysis, Advanced Algebra, Probability Theory, Mathematical Statistics, Bayesian Statistics, Structural Equation Modeling, Time-Series Analysis, Stochastic Process, Regression Analysis, Nonparametric Statistics, Machine Learning, Financial Mathematics;
- Skilled in: **R, Python, C++, LaTeX**
- Standardized Tests: **IELTS** (6.5; 6.5/8.5/6/5.5)
- Links: Github, Personal website

Research Experience

Estimation of self-exciting integer-valued threshold model via bayesian inference and data cloning
Researcher **Advisor: Prof. Lianyong Qian** **Jul.2023 –**

- Constructed the SETINAR model and generated synthetic data;
- Derived the posterior distribution of parameters and utilized Gibbs sampling based on it;
- Employed Metropolis-Hastings sampling to estimate latent variables and estimated thresholds based on the maximum posterior function;
- Applied data cloning methodology, including the number of clones, sample size, and prior substitution;
- The results demonstrated that this approach enhances estimation precision while disregarding the impact of priors.

Bell-INGARCH Model
Research Assistant **Advisor: Prof. Lianyong Qian** **Mar.2023 – Nov.2023**

- Developed a novel INGARCH model based on the Bell distribution;
- Demonstrated the statistical properties of the proposed model, as well as stationarity and ergodicity;
- Employed the conditional maximum likelihood estimation method to estimate parameters in the model. Numerical simulation results validated the effectiveness of this approach;
- Applied the BELL-INGARCH model to two real-world datasets and compared its performance against PINGARCH, NB1-INGARCH and NB2-INGARCH models. Using the log-likelihood function, AIC, and BIC criteria, the BELL-INGARCH model demonstrated superior performance compared to the other models.

Predicting Wordle Results(MCM)
Researcher **Advisor: Prof. Pengfei Liu** **Feb.2023**

- Executed multiple rounds of training on the LSTM model to generate 100 prediction outcomes. Utilized the 95% confidence interval to determine the interval prediction;
- Identified and extracted word attributes. Employed canonical correlation analysis to deduce that the frequency of the first letter is the attribute most strongly correlated with the percentage of scores;
- Transformed words into numerical matrices via word embedding techniques. Designed and trained a CNN model, further enhanced through grid search optimization, achieving an impressive accuracy rate of 0.9;
- Developed a hierarchical clustering model using the AHP-EWM approach to classify solution words based on their levels of difficulty.

CT Image Recognition of COVID-19 Pneumonia
Researcher **Jan.2023**

- Constructed a data generator to extract image data from the SARS-CoV-2 CT-scan dataset available on Kaggle, incorporating an effective data augmentation process;
- Selected three well-known models, namely MobileNetV2, ResNet50 and VGG19, to undergo distinct transfer learning experiments. Subsequently, fine-tuned each model's hyperparameters to enhance their performance;
- Enhanced the models' performance through dynamic adjustment of the learning rate hyperparameter, resulting in improved convergence and accuracy;

- Evaluated the models comprehensively using metrics including accuracy, sensitivity, specificity, AUC, PPV, and NPV. Ultimately determined that the transfer learning model based on MobileNetV2 exhibited superior overall performance.

Publications

- Bell-INGARCH model. (*preprint, arXiv:2311.11352*), *Ying Wang,* ***Shuang Chen****, and Lianyong Qian*

Working Papers

- Parematers Estimation of Self-Exciting Threshold INAR Model via Data Cloning. (2023.08--), ***Shuang Chen****, Kai Yang, and Lianyong Qian*
- The multivariate zero-inflated Poisson INAR(1) processes. (2023.02--), ***Shuang Chen*** *and Lianyong Qian*

Internship Experience

Data Governance Intern **Suqian Municipal Big Data Center** **Jul.2022 – Aug.2022**

- Collaborated with the Data Strengthening Task Force to aggregate and govern public data for municipal departments. Coordinated the organization of 5,400 data categories and 110,000 data elements, encompassing 15 municipal committees and offices;
- Conducted evaluations for county-level big data construction applications, involving querying and verification of 10 key indicators from multiple dimensions;
- Utilized expertise in statistics, machine learning, and related fields to perform modeling analysis and visualization of data.

Leadership Experience

President **Student Union Federation** **Aug.2022 – Aug.2023**

- Led and managed a diverse team of 23 executives, overseeing 86 student clubs and organizations, fostering collaboration, and facilitating effective communication;
- Developed and executed strategic initiatives to enhance student engagement;
- Exhibited strong organizational and leadership skills, effectively managing administrative duties, event planning, and team coordination. Additionally, as the lead organizer, orchestrated three events with audiences exceeding 500 participants in each instance.

Awards&Honors

- **2023/2022/2021**: School Scholarship for excellent students
- **2023**: First Prize in MCM(Mathematical Contest in Modeling)
- **2023**: First Prize in CRA(China Students' Market Research and Analysis Competition)
- **2022**: Third Prize in APMCM(Asia-Pacific Mathematical Contest in Modeling)
- **2022**: Outstanding Student of Jiangsu Normal University
- **2022:** Third Prize in MathorCup(University Mathematical Modeling Challenge)
- **2022:** Third Prize in CSCM(China Students' Statistical Contest in Modeling)
- **2022:** Second Prize in CRA(China Students' Market Research and Analysis Competition)