**Zirong Zhao**

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EDUCATION

**Central University of Finance and Economics, Beijing, China**

***Master of Applied Statistics*** *Sept 2021 – June 2023*

**Major GPA:** 90.31/100

**Major courses:**

Multivariate Statistical Analysis (92/100), Distributed Computing for Big Data (91/100), Statistical Basis for Big Data Analysis (92/100), Statistical Survey (87/100), Exploratory Data Analysis (85/100)

***Bachelor of Applied Statistics*** *Sept 2017 – June 2021*

**Major GPA:** 92.96/100

**Major courses:**

Numerical analysis (98/100), Mathematical analysis (91/100), Mathematical Statistics (94/100), Regression Analysis (96/100), Probability Theory (99/100), Statistical Computing (90/100), Time Series Analysis (95/100), Discrete Mathematics (93/100), Multivariate Statistical Analysis (95/100)

**University of Michigan, Ann Arbor, America**

Summer Program in Quantitative Methods of Social Research *Jul 2019 – Aug 2019*

**Courses:**

Categorical Data Analysis

PUBLICATION

[1] Sparse Optimization of Poisson Regression Based on the GPGN Algorithm, Chinese Journal of Applied Probability and Statistics, 2024. (Accepted)

RESEARCH EXPERIECNE

**Sparse Optimization of Poisson Regression Model Based on GPGN Algorithm** *Sept 2022 – May 2023*

***Advisor: Prof. Siyang Wang* |** Central University of Finance and Economics

* The majority of existing studies define the model as a sparse optimization model with penalty. This study, however, opts for using an penalty. Additionally, most methods currently used in this problem primarily rely on first-order algorithms. In contrast, the GPGN algorithm chosen in this paper is a second-order sparse optimization method, offering high computational precision and faster speed.
* In this paper, it is proven that when the independent variable matrix meets certain conditions, the objective loss function satisfies the optimality conditions of the GPGN algorithm, specifically that the loss function is strongly smooth. This theoretical proof provides a solid foundation for extending the GPGN algorithm to sparse optimization in Poisson regression. Additionally, based on the proof process, the selection range of hyperparameters is derived, thereby extending the application of the GPGN algorithm from sparse-constrained optimization in logistic regression to sparse-constrained optimization in Poisson regression.
* Provided numerical resource of sparse constrained optimization in Poisson regression on both synthetic and real datasets. Compared the GPGN algorithm with L-BFGS, OWL-QN, GLMnet, Picasso-L1, and Picasso-MCP optimization methods. GPGN algorithm exhibited a significant advantage in computational speed and variable selection capability compared to the other algorithms. Furthermore, it achieved lower loss function values.
* **Tools Used:** MATLAB computer vision, Python.

**Career Expectations and On-the-Job Consumption Behavior of Executives in State-Owned Enterprises in the Context of Anti-Corruption** *Sept 2019*

(Beijing Municipal Project under the National College Student Innovation and Entrepreneurship Training Program)

***Advisor: Dr. Zhe Li* |** Central University of Finance and Economics

* Using a sample of 1,096 state-controlled companies listed on the Shanghai and Shenzhen Stock Exchanges from 2009 to 2014, we constructed an OLS regression model. The model utilized the total amount of eight sub-items under 'Other cash payments related to operating activities' in the annual cash flow statements, the average number of years until executives' retirement, and a dummy variable measuring the intensity of anti-corruption enforcement.
* The conclusions were as follows: 1. As their careers approach the end, executives in state-owned enterprises seek more on-the-job consumption. 2. Anti-corruption measures significantly weaken the substitution effect between career expectations and on-the-job consumption. 3. Compared to local state-owned enterprises, anti-corruption measures have a more effective inhibitory effect on the on-the-job consumption of executives in central state-owned enterprises.

**Research on Automobile Insurance Purchasing Behavior Based on Data Mining Algorithms**

*Oct 2020 – Apr 2021*

***Advisor: Prof. Rui Pan* |** Central University of Finance and Economics

* Using a dataset of 500,000 policyholders from an insurance company, we utilized the SMOTE algorithm and a random forest model to predict whether customers would purchase the insurance, despite sample imbalance. After tuning the model parameters, the prediction accuracy on the test dataset was 84%.
* The study explored which characteristics make customers more likely to accept the company's automobile insurance: customers who pay lower annual premiums, long-term clients of the company, and those who have not previously purchased automobile insurance are more inclined to choose this insurance. The findings provide a reference for insurance companies in customer selection.

**Development Report on China’s Green Bond Market** *Apr 2019*

***Advisor: Prof. Yingzhe Shi* |** Central University of Finance and Economics

* Responsible for writing the section on the regional distribution of labeled green bonds in the report. Analyzed the regional differences in the number and issuance timing of green bonds in 2018, finding that Fujian Province issued 60 billion RMB in green bonds, ranking first. It was also observed that economically developed regions, such as the eastern coastal areas, had higher amounts and frequencies of green bond issuances compared to economically underdeveloped regions.
* Responsible for writing the section on the rating of labeled green bond issuances. This involved summarizing the rating status of labeled green bonds issued in 2018, and finding that the issuance volume of AA-rated green bonds was higher than that of other rated green bonds.

WORK EXPERIENCE

**The Industrial and Commercial Bank of China Limited, Shanghai Branch, Shanghai, China** *Aug 2023 – Jul 2024*

***Management Trainee***

* Learning the basic operations of bank outlets and participating in roles such as lobby manager, cash teller, and back-office settlement operations.Learning about various online financial products and participating in cash settlement projects.
* Studied budget management and asset-liability related knowledge, including internal accounting terms and FTP pricing, as well as loan impairment provisions.

**Kuaishou -** **Center for Growth and Ecological Analysis** *May 2022 – Aug 2022*

***Big Data Analyst (Intern)***

* Focusing on the search functionality of the app, this research explores its development prospects among users and provides references for improving the search function. Using the Matching method, we investigated whether search behavior impacts user retention rates the following day. The conclusion is that the impact on retention is significant for newly acquired and returning users, while the effect on other user groups is not apparent.
* Conducted data analysis work based on the requirements proposed by the product team.This provides data support for business decision-making.

HONORS AND REWARDS

* Academic Excellence Scholarship in 2019
* Academic Excellence Scholarship in 2020
* Graduate Student Academic Award (Second Prize Scholarship) in 2022

SKILLS

* Computer: Python , MATLAB , R , SQL, Office.