

# HOUSHI HE

School of Mathematics, Jilin University, Changchun, Jilin, 130012, China

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## EDUCATION

### Jilin University - School of Mathematics

Bachelor of Science Degree, Major in Statistics GPA: 89.22/100 (Top 10%)

Jilin Province, China

Sep 2020 - Jun 2024

## RELEVANT SKILLS

**Languages:** Chinese (Native), English (Fluent), German (Basic)

**Computer Skills:** Python, R Language, SQL, C Language,  $\text{\LaTeX}$ , Microsoft Office

**Machine Learning Frameworks Skills:** Scikit-learn, SciPy, Pandas, NumPy

**Interpersonal:** Leadership, Communication, Problem-solving, Multi-tasking, Time management

## RESEARCH & PROJECTS

### Bayesian Estimation of Covariance Matrices Using Aggregate Data

Victoria, Canada

Advisor: Prof. Xuekui Zhang

Aug 2023 - Nov 2023

- Collected aggregate data from tests of different medications for similar symptoms; employed Bayesian hierarchical modeling to unveil correlations between indicators, such as age and height.
- Utilized the inverse Wishart distribution as the prior distribution for  $\Sigma$ , ensuring conjugacy in Bayesian statistics, facilitating the derivation of the posterior distribution form, and simplifying the computation of Bayesian inference.
- Derived the likelihood function based on the prior distribution and available information.

### Application of Machine Learning for Auto Insurance Pricing

Changchun, China

Advisor: Prof. Jianhua Cheng

Apr 2023 - May 2023

- Collected and analyzed auto insurance claims data, incorporating factors such as the driver's age, car age, brand, etc.
- Cleaned raw data to ensure accuracy and reliability in the analysis.
- Applied various ML methods, including logistic regression, XGBoost, random forest, decision trees and K-NN for predicting claim occurrences; assessed and compared the performance of these models.
- Dealt with 500,000+ data; utilized various data science libraries, including Scikit-learn, NumPy and Pandas data frames.

### Application of Propensity Score Matching for Intervention Effects Estimating

Shenzhen, China

Advisor: Dr. Dong Fang

Jun 2022 - Jul 2022

- Selected confounding variables and extracted 2,000,000+ data by SQL; cleaned and processed data in Python.
- Applied logistic regression to calculate propensity score and predict exposure probability to create virtual control groups.
- Matched experimental groups and control groups; applied bucket matching to improve matching efficiency.
- Calculated the average treatment effect of exposure on the return rate of churned users.

## INTERNSHIP EXPERIENCE

### Tencent

Shenzhen, China

Data Analyst Intern, Data Platform Department

Jun 2022—Aug 2022

- Leveraged SQL and Python to collect and analyze key data metrics related to retention, user activity, etc. from specific gaming apps; modeled player characteristics and behaviors, enabling targeted insights and strategic decision-making.
- Designed A/B tests based on North Star metrics to foster product iteration and enhance user quantity and quality; performed hypothesis testing to check the statistical significance of the results.
- Structured and established a comprehensive framework for business data metrics and analysis; implemented an intelligent decision-making methodology; identified key business revenue growth opportunities.

### General Electric

Tianjin, China

Project Consultant, Hydro Center of Excellence

Jul 2021 - Aug 2021

- Developed a virtual factory tour solution for clients unable to visit during the COVID-19 pandemic, saving the factories an estimated annual cost of 150,000 yuan in client visit expenses and reducing carbon emissions by 365,000 kg per year.
- Conducted on-site visits to factories, engaged with factory officials, gathered display elements, standardized the elements, visualized the displays, and designed the online factory tour webpage and process.
- Cooperated with 7 members effectively; assigned tasks based on members' strengths and scheduled the meetings.

## AWARDS

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- **Mitacs Globalink** Research Internship Award (**10,000 Canadian\$**)
- **Second Class** Scholarship in the academic year of 2022-2023
- **Second prize** in the Chinese Mathematical Contest in Modelling, Jilin Division
- **Second prize** in the Chinese Mathematics Competitions, Jilin Division
- **The College Excellent Student** in the academic year of 2021-2022
- **Second Class** Scholarship in the academic year of 2021-2022
- **Third Class** Scholarship in the academic year of 2020-2021

## EXTRACURRICULAR ACTIVITIES

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### Chinese Volunteer Federation (Jilin University)

**Changchun, China**

*Membership*

*Oct 2020 - Jun 2021*

- Collaborated with the Changchun Meow-Love Stray Cat Rescue Team to conduct stray cat rescue operations, including weekly visits to clean and care for the cat shelter, actively contributing to stray cat welfare.
- Collaborated with Jilin University Nanling Campus Library to organize weekly book organizing sessions and public book exchange markets, fostering a culture of knowledge sharing and accessibility.

### Love Tiecheng Youth Volunteer Association

**Changchun, China**

*Peer Advisor*

*Mar 2021 - Jun 2022*

- Implemented and consistently delivered highly personalized assistance, effectively aiding non-math major and lower-grade students in comprehending intricate mathematical concepts and theories, fostering a supportive learning environment.
- Contributed to a collaborative team focused on promoting academic success within a diverse student body.
- Provided guidance on effective study techniques and problem-solving strategies; assisted in solving mathematical problems and clarifying mathematical definitions and theories, fostering a supportive learning environment.