

HOUSHI HE

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Department of Mathematical Sciences, Chalmers University of Technology

EDUCATION

Chalmers University of Technology

Master of Science Degree, Major in **Engineering Mathematics and Computational Science**

Gothenburg, Sweden

Sep 2024 - Jun 2026

Jilin University

Bachelor of Science Degree, Major in **Statistics**

Jilin Province, China

Sep 2020 - Jun 2024

University of Victoria

Mitacs Globalink Research Internship (Fully Funded)

British Columbia, Canada

Aug 2023 - Nov 2023

RELEVANT SKILLS

Computer Skills: Python, C Language, R Language, SQL, \LaTeX , Microsoft Office

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

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

RESEARCH & PROJECTS

The Causal Effect Analysis of Emotional States and Sjögren's Syndrome

Changchun, China

Advisor: **Prof. Shishun Zhao & Dr. Tianjiao Ma** (Jilin University)

Jan 2024 - Jun 2024

- Evaluated the potential causal relationship between Sjögren's syndrome and emotional states using GWAS data.
- Used R language to apply five Mendelian randomization methods, establishing causal relationships between schizophrenia, post-traumatic stress disorder, and Sjögren's syndrome, with p-values below 0.05.
- Confirmed the robustness of results through tests for heterogeneity, horizontal pleiotropy, and sensitivity analyses, providing new insights into the connection between emotional states and Sjögren's syndrome.

Bayesian Estimation of Covariance Matrices Using Aggregate Data

Victoria, Canada

Advisor: **Prof. Xuekui Zhang** (University of Victorias)

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 Σ , 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 Propensity Score Matching for Intervention Effects Estimating

Shenzhen, China

Advisor: **Dr. Dong Fang** (Tencent)

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 a framework for business data metrics and analysis; 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.

AWARDS

- **Avancez Scholarship** from Chalmers University of Technology with tuition fee waiver (**240,000 SEK**)
- **Mitacs Globalink** Research Internship Award (**10,000 Canadian\$**, around **80,000 SEK**)
- **Second Class** Scholarship from Jilin University in the academic year of 2022-2023
- **Second prize** in the Chinese Mathematical Contest in Modelling
- **Second prize** in the Chinese Mathematics Competitions
- **The College Excellent Student** from Jilin University in the academic year of 2021-2022
- **Second Class** Scholarship from Jilin University in the academic year of 2021-2022
- **Third Class** Scholarship from Jilin University in the academic year of 2020-2021

EXTRACURRICULAR ACTIVITIES

Chalmers International Reception Committee

Gothenburg, Sweden

Student Ambassador

Oct 2024 - Oct 2025

- Introduced Chalmers University of Technology, student life, and the various tracks within the Engineering Mathematics and Computational Science master program to prospective students worldwide.
- Participated in webinars, engaged with prospective students, and contributed to Chalmers' social media contents.
- Collaborated with other student ambassadors to create positive experiences for guests and prospective students.

Gothenburg Academic Lecture Interpretation

Gothenburg, Sweden

Academic Interpreter for Prof. Khamis Essa (University of Birmingham)

Nov 2024

- Assisted Prof. Essa in familiarizing himself with Gothenburg and coordinated the academic lectures.
- Interpreted specialized content related to fatigue analysis, fatigue testing, and life extension.
- Provided real-time Chinese-English translation for Prof. Essa and the Chinese delegation, including a full day of consecutive interpretation between Chinese and English.

Science Summer Camp at CityU of Hong Kong

Hong Kong, China

Camper, Fully Funded by College of Science at CityU

Jul 2023

- Visited state-of-the-art research facilities, conducted a comprehensive campus tour, attended departmental research seminars led by esteemed faculty members, and engaged in informative meetings with current Ph.D. students.
- Participated in information talks on research education opportunities at the Department of Biostatistics.