Jingrui(Murphy) Mu

Github: https://github.com/Mujingrui

EDUCATION

McGill University — **Montreal, Canada**
Philosophy of Doctor in Statistics — **Sep.2022-Present**
University of Ottawa — **Ottawa, Canada**
Master of Science in Statistics — **Sept.2019-Jan.2022**
University of International Business and Economics (UIBE) — **Beijing, China**
Bachelor of Economics in Economic Statistics — **Sept. 2015-Jun.2019**

RESEARCH INTERESTS

- Distributed Learning in Ultra-high dimensional Big Data Problems
- Distributed Statistical Inference

RESEARCH EXPERIENCE

Statistical Analysis for COVID-19 Data based on Spatial-Temporal Model Apr.2020-Aug.2021
Supervisor: Professor Mayer Alvo
Paper Published: https://www.mdpi.com/2188000.

- Specifying a Bayesian Spatial-temporal model to consider spatial and temporal effects on the spread of the virus in Ontario.
- Using the Spatial-temporal model to assess policy decisions and test the significance of auxiliary variables.
- implementing ATA and ATP Poisson Kriging to provide another approach to create spatial maps which considers the sizes of the units used in aggregation of the data.
- Developing an interactive web website to show these tracking maps based on these methods with the use of Shiny package in R. (https://mujingrui.shinyapps.io/covid19)

Statistical Inference of Regression Model for Longitudinal Counting Data with Zero Expansion Covariates , Peng Ye's Group, School of Statistics, UIBE Jul.2018-Mar.2019
Research Assistant, Supervisor: Dr._ Peng Ye

- Help Professor Peng Ye Programming R code about GEE-type approach mixture model that is proposed to jointly model the response of interest and the zero-inflated predictors.
- Analyze three different classes of response data and got the results of estimators to verify the reliability of this method.

SELECTED PROJECTS

Multiclass Sparse Discriminant Analysis
Mar.2020-Apr.2020

- Implement a new method for high-dimensional classification and variable selection from Mai, Yang and Zou in R
- Simulate four data models dataset and apply this method on the IBD dataset and the simulated dataset
- Use the results to compare this method with l1 penalized Fisher's discriminant analysis

Application of MCMC to Estimate Parameters on Binary Response Data in R Dec.2019

- Using Bayesian Probit Model with different priors on and Bayesian Logit Model to estimate the posterior distribution of parameters of interest
- Test the prediction accuracy of Bayesian models by comparing them with SVC model in the use of ROC curve
- Use Bayes Factors to exclude unimportant predictors for promoting models

Profile of online-knowledge usage among Beijing college students and research on its influence factors Jan.2018-Mar.2018

- Compiled a questionnaire and conducted the survey through online
- Analyzed the data based on Factor Analysis with R and built up a model to measure online-knowledge customers' satisfaction and purchase intention according to common factors above
- Built up a cumulative logit model to measure customers' satisfaction with R

Responsibility Analysis of other counties for carbon dioxide emissions in China from perspective of consumer May.2017-Jun.2017

- Collected data of World Input-Output Tables 1996-2009 and China carbon dioxide emission tables 1996-2009 from WIOD database
- Cleaned data and constructed direct consumption coefficient matrix、final demand matrix of each country with MATLAB
- Calculated the carbon dioxide emission from other countries' final consumption and China's implicit carbon emission from net exports to the United States with MATLAB based on MRIO Model

TEACHING EXPERIENCE

Faculty of Science, McGill University Jan.2023-Present

- MATH222 Calculus 3
- MATH323 Probablity
- MATH324 Statistics

Faculty of Science, University of Ottawa Sept. 2020-Aug. 2021

- MAT2379 Introduction to Biostatistics
- MAT1300 Mathematics Methods I
- MAT2384 Ordinary Differential Equation & Numerical Methods
- MAT1348 Discrete Math for Computing
- MAT1332 Calculus Life Sciences II
- MAT1330 Calculus Life Sciences I

HONORS AND AWARDS

- **Remarkable Student,** 2020-2021 Research Report, Faculty of Science, University of Ottawa
- **H Prize**, 2018 COMAP's Mathematical Contest in Modeling 2018
- **Second Prize**, Eighth National Collegiate Market Research and Analysis Competition 2018
- **Outstanding Award**, Fifth National Undergraduate Statistical Modeling Competition 2017
- **National Top 50**, 2017 China SAS Data Analysis Contest (50/1036) 2017
- **Second Prize**, The Ninth "Challenge Cup" Science and Technology Competition for College Students Academic Works 2017
- **Silver Award,** Tenth "Challenge Cup" Undergraduate Business Plan Competition 2017

- **Second-Class Scholarship** & **Third-Class Scholarship** 2015-2018
- **Outstanding Student**, School of Statistics 2016

INTERNSHIPS AND ACTIVITIES

- **Junior Research Analyst,** CS-CAN | INFO-CAN, Canada Oct.2022-Dec.2022
  Worked independently and reported to a member of the CS-CAN — INFO-CAN Research Committee.
  provided data analysis support to the production of CS-CAN — INFO-CAN study on Canadian Computer Science research and research funding.

- **Volunteer, Math to Power Her Life, University of Ottawa,** May. 2022
  Math to Power Her Life is designed to showcase different aspects of mathematics to girls in Ottawa attending middle school (Grade 7-9).
  Encouraged girls at this vulnerable age to stay tuned to their mathematical interests by showing them what they could eventually pursue in the field.

- **Vice President – Academic, Graduate Student Society for Mathematics and Statistics, 2023-2024**
- **Organizer of the 2024 (Bio) Statistics Research Day at McGill**

SKILLS

R, Python, SAS, SPSS, MATLAB,Tableau, SQL *(Proficiency ranking from high to low)*