Panxi Chen

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Education

M.S. (Applied Statistics), University of Michigan, Ann Arbor (U-M), 2021-2023
Overall GPA: 3.96/4.00

Core Curriculum: Regression, Multivariate Analysis, Probability and Distribution Theory, Statistical Inference, Time Series, Bayesian Modeling, Information Retrieval

B.S. (Mathematics), Illinois Wesleyan University (IWU), 2016-2020
Major GPA: 3.77/4.00; Dean's Lists

Core Curriculum: Numerical Analysis, Real Analysis, Differential Equations, Linear Algebra, Modern Algebra, Discrete Mathematics

Exchange Program (Mathematics), University College London (UCL), 2019

Skill

Programming: Proficient in R, Python, Julia, SQL, Java, C++, Mathematica, MATLAB, Processing

Other: Proficient in LaTeX, Office, Tableau, Adobe

Languages: Chinese (native); English (advanced)

Research & Internship

Spatial Characteristics of Glomerular Distribution in Human Kidney Samples

Research Assistant, Supervised by Dr. Kerby Shedden, U-M, Dec 2021 – Present

Explore data depth, UMAP, t-SNE, and apply them to the glomeruli point data after optimization.

Study the cluster structure of glomeruli employing topological data analysis, utilize topological mode analysis tools to eliminate interferences generated by noisy data.

Detect the linear structure of glomeruli based on the Hough transform.

Automatic Calibration of Oil and Gas Metrological Verification System

Research Intern, PipeChina Oil & Gas Metering Center, Mar 2021 – July 2021

Located and extracted data from the main SQL database, visualized data, returned results to the main database, and saved results to local.

Developed software to automate calibrations of metrological verification system using Python, and designed the front-end interface.

Characterizing the leaves of maximum packings of complete graphs with stars

Independent Research, Presented at JWP Research Conference, Supervised by Dr. Daniel Roberts, IWU, Aug 2019 – Dec 2019

Derived a general formula for calculating all possible leave cardinalities of a set of edge-disjoint subgraphs of the complete graph on n vertices, where each subgraph is isomorphic to the complete bipartite graph.

Applied Java and Python as tools, defined an interactive function to implement the above algorithm.

Created a CSV file to store all corresponding values after sorting and cleaning for subsequent calls.

Risk Assessment of Investment Projects

Markets Analytics Intern, China Guangfa Bank, June 2019 – Aug 2019

Developed quantitative finance models through R and SQL to evaluate risks in diverse investment projects.

Visualized evaluation for clients through informative curves and charts produced by Excel and Tableau.

Recursive Sequences and Girard-Waring Identities

Research Assistant, Presented at JWP Research Conference and McLean County Stem Gala, Supervised by Dr. Tian-Xiao He, IWU, Aug 2017 – Dec 2018

Constructed the generalized Girard-Waring identity from recursive sequences and explored its application in sequence transformation.

Established the classical Girard-Waring identity using divided difference approximation and generalized Girard-Waring identity.

Conducted in-depth study about summation formulas construction and Hagen-Rothe type identities.

Publication

P. Chen, X. Li and W. Wang, "Improving Occluded Face Recognition with Image Fusion", *2020 13th International Congress on Image and Signal Processing, BioMedical Engineering and Informatics (CISP-BMEI)*, 2020, pp. 259-265, doi: 10.1109/CISP-BMEI51763.2020.9263664.

Class Project

Aug 2022 – Dec 2022

EECS 549 / SI 650 Information Retrieval

Adopted NLP tools to retrieve information from grocery shopping records, obtain consumers' shopping habits.

Calculated each customers' nutritional intake and compare to nutritional intake standards.

Recommended products with nutrients that consumers needed according to their preferences.

MATH / BIOINF 540 Mathematics of Biological Networks

Explored a suitable biological network model to track the spreading of COVID-19 around the world using the k-means clustering algorithm as the main method.

BIOSTAT 615 Statistical Computing

Constructed an R package to facilitate research based on the Hough Transform by increasing the

transparency and interpretability of calculations.

Jan 2022 – Apr 2022

Stats 531 Modeling and Analysis of Time Series Data

Built SARIMA models to fit and predict on flu time series data.

Constructed a SIRS epidemiology compartmental model with seasonality and time-variable transmission to infer the association between the decrease in influenza cases and the decline in transmission rate during the COVID-19 pandemic.

Stats 551 Bayesian Modeling and Computation

Transformed sentiment-classified review texts into designed features via natural language processing tools.

Tried two supervised Bayesian models, Naïve Bayes and Bayesian Logistic Regression, to assess the appropriateness of the designed features.

Stats 503 Statistical Learning II: Multivariate Analysis

Selected multiple machine learning algorithms using EDA and unsupervised models.

Modeled with different machine learning algorithms to improve the classification accuracy of the nature of breast mass.

Determined the best model based on error rates and accuracy metrics.

Aug 2021 – Dec 2021

Stats 506 Computational Methods and Tools in Statistics

Identified latent variables that determine people's booking activity via EDA.

Established statistical models via R to predict the cancellation probability of hotel reservations based on reservation details and related user characteristics.

Extracurricular activities

Teaching assistant

Grader for *Mathematical Statistics I - Probability and Distribution Theory*, U-M, Aug 2022 – Dec 2022.

Teaching Assistant for *Applied Analysis I & II, Finite Mathematics*, IWU, Aug 2017 – May 2020.

Others

Student Volunteer, IWU Open House, IWU, Nov 2016.

Technical Assistant, Dept. of Mathematics, organize math lectures, design flyers and posters, edit publicity videos and interviews to create promotional visuals, IWU, Aug 2017 – May 2020.

Senator, IWU Student Senate, IWU, Aug 2017 – Dec 2018.