Sharmin Hossain

sharminhossain3007@gmail.com • +17017812854 • Linkedin • Google Scholar • GitHub • Medium

WORK EXPERIENCE

Researcher | *North Dakota State University (Statistics Department)*   Aug 2020 - Aug 2024

- Proposed an empirical likelihood test for detecting community structure in both weighted and unweighted networks, addressing limitations in conventional hypothesis testing approaches focused primarily on unweighted networks.
- Utilized R programming for advanced statistical analysis, including the computation of test statistics, empirical likelihood ratio distributions, and p-values, while evaluating type I error rates and the power of the empirical likelihood test against traditional statistical frameworks by conducting 500 simulations.
- Extended simulations to weighted networks using Beta and Gamma distributions for edge weights, analyzing test accuracy and power for different probabilities.

Graduate Teaching Assistant | *North Dakota State University*   Aug 2021 - May 2024

- 3 years of experience in conducting 10+ laboratory sessions per semester for classes of 25+ students using JMP software for courses such as Introduction to Statistics and Regression Analysis, providing hands-on training in statistical methodologies.
- Assessed and evaluated student performance through grading and offering constructive feedback, enhancing their statistical understanding and problem-solving skills.
- Facilitated tutoring sessions focused on improving students' grasp of data analysis and statistical concepts, fostering academic development.

Deputy Director of Pricing & Analytics Team | *Chaldal Limited (Online Grocery Platform)*   Oct 2018 - July 2021

- Led a 10-member team responsible for pricing over 4,000 products, optimizing strategies to increase profitability while reducing the product pricing update cycle from 48 hours to 24 hours.
- Formed an "Analytics Team" comprising 5 members, providing valuable data insights to different departments, enhancing decision-making processes and operational efficiency.
- Took charge of defining key metrics for all Chaldal departments, particularly senior management, streamlining performance evaluation and strategy development.
- Drove Chaldal's monthly sales target for Unique SKUs, achieving a record-breaking performance in November 2019, surpassing the previous five years' data.
- Focused on optimizing Chaldal's grocery margin, ensuring operational profitability through strategic pricing and cost management.
- Led the Chaldal growth project, aiming to increase the average monthly basket size per customer, enhancing the overall customer experience.
- Managed Retention campaigns, conducting monthly and weekly cohort analysis to assess the effectiveness of various campaigns and categories.
- Innovated automated order information measurement formats, streamlining the tracking of customer service and live chat data.
- Conducted SQL training for over 30 individuals, empowering them to generate their own reports, improving data accessibility and analysis capabilities.
- Analysed daily losses related to orders, products, and purchases, leading the development of a fraud management system to detect abuses within 24 hours, enhancing operational security.
- Contributed to Revenue & Cost reconciliation efforts, facilitating the financial audit process for the company.
- Established a "Monitoring Team" to oversee critical aspects of the company, enhancing proactive management and ensuring overall organizational effectiveness.

Data Analyst & Growth Hacker | *Rokomari.com (Online Book Shop)*   Apr 2016 - Aug 2018

- Developed various formats (primarily using Google Sheets) to structure data from different marketing strategies, enabling in-depth analysis of pre and post-branding data for informed future decisions.
- Collaborated with stakeholders to comprehend performance metrics and assisted in crafting KPI dashboards, ensuring

clear visualization of key data points for strategic planning.

- Conducted training sessions on SQL and Excel for team members, enhancing their data analysis skills and promoting self-sufficiency in report generation.
- Engaged in ongoing research and development to explore newly developed data collection tools and techniques, fostering continuous improvement in data analysis processes.
- Curated growth hacking concepts, organized and prioritized them, laying the foundation for innovative strategies.
- Performed initial data analysis to assess the feasibility and potential of selected ideas, gaining valuable insights into the current landscape.
- Designed 30+ growth hacking tests, defining relevant metrics to measure their success or failure, ensuring rigorous evaluation of implemented strategies.
- Executed tests, analyzed results, presented comprehensive reports, and collaborated with team members to make informed decisions. Created documentation for future reference.
- Implemented and evaluated A/B Tests to uncover actionable insights and optimize strategies for enhanced performance.

VOLUNTEER EXPERIENCE

Volunteer | *Bidyanondo Foundation*   Oct 2014-Apr 2016
- Volunteered for 1.5 years at Bidyanondo as a teacher and training coordinator, gaining experience in team leadership, event coordination, and contributing to the organization's educational initiatives.

Assistant Trainer | *World Academy of Research and Development (WARD)*   Jul 2015
- Assisted both the trainer and trainees in successfully completing a "Microsoft Excel" training program, applying my expertise while gaining new skills in the process.

EDUCATION

PhD in Statistics | *North Dakota State University*   Aug 2024
Courses: Multivariate Methods,Statistical Machine Learning,Time Series,Advanced Data Mining,Experimental Design, Longitudinal Data Analysis.Introduction to Database System, Advanced Econometrics, Applied Regression Models.

M.S. in Applied Mathematics | *University of Dhaka*   Dec 2015
Courses: Fluid Dynamics, Applied Numerical Methods, Riemannian Geometry, Stochastic Modelling in Finance.

B.S. in Mathematics | *University of Dhaka*   Aug 2014
Courses: Calculus, Linear Algebra, Abstract Algebra, Real Analysis, Tensor Analysis, Numerical Analysis, Functional Analysis, Method of Applied Mathematics, Linear Programming, Theory of Number, Mathematical Finance.

PUBLICATION

Yuan, M., Hossain, S. and Shang, Z., 2023. Empirical likelihood test for community structure in networks (in review).

TRAININGS & CERTIFICATIONS

- Code in Place In Python | Stanford University (Online) | Control flow, Loops, Graphics, Dictionaries.
- SQL (Advanced) Certificate | HackerRank | Advanced Join, Aggregation, Data Manipulation.
- Learning Microsoft Power BI Desktop | LinkedIn | Data Analysis, Business Intelligence, Statistics.
- Google Analytics Individual Qualification | Google | Conversion, Attribution, Metrics, Dimensions.
- Google AdWords Search & Display Certification | Google | Optimization of Ad Campaigns.
- Python Data Structure | University of Michigan (Online) | List, Dictionaries.

PROJECTS

- Local and Global Stability of Epidemiology | MS Project | Lyapunov Function, Dulac Criterion, HIV Vaccine Model.
- Testing for Network Community Structure | Red River Valley Statistical Conference | ST, WST & ELT Methods.
- Sentiment and Recommendation Analysis of Amazon Reviews | Advanced Data Mining Project | RNN, LSTM Methods.
- Covid-19 Time Series Analysis of Bangladesh | Time Series Project | ARIMA & GARCH Methods, Shapiro–Wilk Test.
- Predicting Subscription of Bank Customers | Machine Learning Project | Decision Tree, Random Forest, SVM Methods.
- Inventory Management System of Store (E-Commerce) | Database System Project | EER Modeling, Data Maniipulation.

- Monthly Sales Quantity Prediction Over Time | Time Series Project | ARIMA, Seasonal Naïve methods.
- Characteristics for Bank Customer's Subscription | Multivariate Method Project | Stepwise, Discrim, GLM Procedure.

EXTRACURRICULAR INVOLVEMENT

- Served as a host for various university departmental events and programs at Bidyanondo, demonstrating strong public speaking and organizational skills.
- As a former BNCC (Bangladesh National Cadet Corps) Cadet, developed adaptability, team leadership, and a consistent ability to create, maintain, and execute tasks within a team environment.
- Established a book club at my previous workplace, where members reviewed different books and exchanged key insights, cultivating a culture of collaborative learning.
- Shared insights and experiences through writing on Medium, where two of my posts were featured in the Marketing and Growth Hacking publication, showcasing my emerging skills in content creation and digital marketing.

SOFTWARE COMPATIBILITY

- MS SQL Server (Join, Data Manipulation) • Python (Pandas, Matplotlib) • Power BI (Power Query,Visualization)
- GitHub (Repositories, Pull Requests) • Google Analytics (Web Traffic, Conversion) • Latex (Documentation)
- hotjar (Funnel Optimization) • Excel (Vlookup, Pivot Table)