BAHAREH ZAHIRODINI

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Education

Bentley University, Waltham, MA

Master of Science in Business Analytics, Data Science | GPA: 3.94   May 2024

Selected coursework: Machine Learning, Data Mining, Time Series Analysis, Statistical Modeling, Quantitative Analysis, Design of Experiments

Shahid Beheshti University, Tehran, Iran

Bachelor of Science in Accounting | GPA: 3.60   June 2013

Research Experience

Research Assistant — Mathematical Sciences and Finance Department

Bentley University, Waltham, MA   May 2023 – Present

- Conducted Bayesian network analysis on a survey dataset with over 6,000 participants, exploring consumer preferences and corporate social responsibility (CSR) trends across demographic and socioeconomic groups.
- Applied e-value on cosine similarity to identify patterns of agreement and disagreement within societal subgroups, detecting echo chamber effects.
- Developed the Partial Credit Model (Rasch model family) to estimate respondents' attitudes, question agreeability, and detect psychological thresholds of responses within groups in survey data.
- Performed clustering and outlier detection on sentiment score curves derived from student essays, contributing to research on community-based learning experiences.
- Independently designed Python scripts to automate investment research and time series analysis on commodity indices, enhancing efficiency and reproducibility.
- Created interactive dashboards using Tableau and R Shiny to visualize research findings and communicate actionable insights to stakeholders.
- Delivered tutorials on data collection, statistical analysis, and financial modeling using tools like Bloomberg, FactSet, and Federal Reserve databases in Bentley Summer School, Wall Street 101.

Publications

- **Bayesian Analysis of America's Business Attitudes** — Accepted, *Chance* (ASA)
  Investigated business sentiment patterns and the influence of socioeconomic status and political affiliations on decision-making.
- **Are all bets off when it comes to agreement gambles?** — Under review, *Significance* (RSS)
  Employed probabilistic models to analyze decision-making under uncertainty.
- **Does age correlate with one's ungauged opinion on modern business practices? A scrutiny through Rasch models** — Under review, *Significance* (RSS)
  Application of Rasch model to uncover generational divides in business expectations.
- **Shape of emotions from a community-based learning experience at the US-Mexico border: functional alignment, summaries, and structural breaks** — Under review, *Chance* (ASA)
  Applied sentiment analysis and clustering to essays, uncovering emotional patterns and shifts.

Innovative Visualizations

- "The Stuff We Cannot Sweep Under a Torn Carpet" — *Nightingale*, Data Visualization Society
- "Pyramids of Priorities and a Poisoned Omen" — *Nightingale*, Data Visualization Society

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Technical Skills

- **Programming:** Python, R, SQL, Excel (Macros, VBA), SAS
- **Data Visualization:** Tableau, Power BI, R Shiny
- **Analytics:** Bayesian Networks, Social Network Analysis, Time Series Analysis, Regression Analysis, Causal Inference, A/B Testing, Functional Data Analysis, NLP, Text Analysis, Data Mining

- **Tools:** Git/GitHub, Alteryx, Snowflake, Microsoft Office

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Academic Projects

- **International Students' Academic Success in U.S. Colleges**
  Applied Principal Component Analysis (PCA) and decision trees to predict graduation rates and identify dropout risk factors from survey data.
- **SAT Scores and Racial Composition Analysis**
  Conducted regression analysis on Massachusetts school data to examine demographic influences on SAT performance.
- **Exploring Consumer Preferences (Bentley-Gallup Force for Good Survey)**
  Performed hypothesis testing on randomized survey responses to assess the impact of question framing.
- **2nd Place Winner, Annual NABA x Bentley Business Bowl**
  Collaborated on a case study addressing Responsible AI and corporate governance in credit lending, focusing on algorithmic transparency.

Work Experiences

Finance Manager

Hezardastan IT Group, Tehran, Iran   March 2020 – May 2022
- Partnered with sales and product team on value chain analysis and overhaul of service delivery, reducing costs by 30% and customer churn by 5%; applied Monte Carlo simulation to optimize service dispatch, increasing capacity utilization by 25%.
- Led data migration and unified multiple databases, reducing reporting time from 2 days to real-time.
- Created P&L reports and interactive KPI dashboards for 3 revenue segments, providing business line owners visibility into financial performance and strategic objectives; improved budget forecasting accuracy by 10%.
- Researched investment and expansion opportunities using Cost-Benefit Analysis and Economic Value Added to inform strategic business model decisions.
- Led an 8-member finance team, reducing monthly close and reporting cycle from 5 days to 3.

Financial and Business Data Analyst

Hezardastan IT Group, Tehran, Iran   April 2017 – February 2020
- Led cross-functional due diligence and built DCF and comparable valuation models for over 10 investments.
- Identified gaps in the market to pivot business models and enhance value propositions.
- Automated journal entries and data collection using Excel macros and standardized templates.
- Developed a micropayment monitoring system using time series analysis, saving 15 hours/month in oversight.
- Designed an Employee Stock Options Plan by clustering employees and tailoring benefit packages.
- Documented and mapped five internal business processes to guide architecture for new internal tools.