Hang Zhao

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SUMMARY

PhD with a strong background in Economics and Statistics theory and expertise in empirical research. Sophisticated Data Scientist with 7 years of demonstrated working and researching experience in machine learning, causal inference, data analysis, data engineering, and data visualization.

EDUCATION

University of Connecticut Storrs, CT
Doctor of Philosophy, Agricultural and Resource Economics *Sep. 2019-July 2023*

Boston University Boston, MA
Master of Science, Actuarial Science *Sep. 2014-May 2016*

University of Colorado Denver, CO
Bachelor of Arts, Economics Major, Math Minor *Sep. 2010-May 2014*

ACADEMIC POSITIONS

Allegheny College Meadville, PA
Visiting Assistant Professor, Dep of Business and Economics; Dep of Computer Science *Aug. 2023- Present*

- Design and independently taught two sections of Economic Statistics, emphasizing practical applications and real-world data analysis.
- Co-taught the Database System course in the Computer Science department to bridge theoretical and practical components.

University of Connecticut Storrs, CT
Graduate Research Assistant, Dep of Agricultural & Resource Economics *Sep. 2019-May 2023*

- Built end-to-end statistical and machine learning models (e.g., Logistic, Poisson, Random Forest, Gradient Boosting) that predict physical and mental health as a function of diet quality.
- Conducted feature engineering (e.g., log, scaling) to improve the accuracy of regression and classification models.
- Designed an ML pipeline with Python, including data pre-processing, evaluation metrics, and boxplot visualizations to perform grid search to fine-tune hyperparameters for ML models.
- Calculated feature importance via permutation testing and displayed results as a sorted boxplot.
- Described how the model is treating each explanatory feature via partial dependence plots.

Boston University Boston, MA
Teaching Fellow, Math Department *Sep. 2015-Jan. 2016*

- Taught and led two discussion sections and held two office hours each week.
- Graded of six assignments and two midterm exams for 70 undergraduate students.
- Assisted with answering student questions related to coursework.
- Collaborated with the professor to determine curriculum designs and exam questions for successful assessment of student knowledge.
- Participated departmental meetings and maintained meeting notes for pending goals and upcoming events.

PROFESSIONAL EMPLOYMENT

Joblogic-X Corporation Plano, TX
Data Scientist Intern *May 2022- Dec. 2022*

- Implemented feature engineering and recommendation algorithms to improve user retention and distinct purchase rate. The recommendation model achieved 12.3% CTR.
- Implemented text cleaning and word embedding (TF-IDF, Bert, and GloVe methods) on product description data to generate features and calculate cosine similarity to generate content-based filtering recommendations.
- Extracted image features using OpenCV for calculating the cosine similarity of product images.
- Identified weights of multiple similarity models based on recommendation performance and used bagging methods to develop the final similarity model.

Buyers Edge Platform New London, CT
Data Analyst *Jan. 2016-May 2019*

- Identified prospective customers, produced optimization reports, and predicted cost savings by analyzing contract prices, distributor invoices, and customer purchase orders.

- Retrieved data from internal database using SQL and JavaScript expressions to save an average of 10+ hours of labor each week.
- Enhanced the data fidelity by unnested complex JSON format columns into individual features. Developed the ETL pipeline to automate the process.
- Generated new features for customers to compare prices offered by BE platform and market price. On average, saved 5 hours for each customer per week.
- Conducted staggered difference-in-difference (DID) analysis to identify the benefits of joining BE platform. Improved onboarding and increased customer adoption rate by 15%.
- Developed Tableau dashboard, including scatter plots, histograms, geo-map, etc., to visualize complex analytics results (customer distribution at county/state level) and provide business recommendations.
- Communicated with 10+ distributors to extract the most updated data for customers.

PUBLICATIONS

Zhao H, Andreyeva T. Diet Quality and Health in Older Americans. Nutrients. 2022 Mar 11;14(6):1198.

PAPERS UNDER REVIEW OR IN PREPARATION

- Zhao H., "OxyContin Reformulation and Drug Related Arrests Rate/Property-Related Crimes."
- Andreyeva T., Zhao H. "Food Security and Health Outcomes Following Gray Divorce."
- Zhao H., Sun, X. "Social Engagement in Rural China and the Urban Housing Market."
- Sun, X., Zhao H. "Obesity and Academic Performance among U.S. Children: Do Bullying Explain the Relation?"

RESEARCH GRANTS EXPERIENCE

USDA, National Institute of Food and Agriculture (NIFA), Storrs Agricultural Experiment Station. Predictors and Consequences of Food Insecurity among Older Americans. 10/01/2019-09/30/2022. Principal Investigator: Tatiana Andreyeva. $60,000. Role: Graduate Assistant.

SEMINAR PRESENTATIONS & CONFERENCES

- 2023 Job Market Paper Presentation, Allegheny College, Department of Computer Science, Meadville, PA
- 2023 Job Market Paper Presentation, University of Texas Medical Branch at Galveston (Virtual).
- 2023 Job Market Paper Presentation, Stony Brook University Public Health (Virtual).
- 2023 Job Market Paper Presentation, University of Tennessee Health Science Center (Virtual).
- 2023 Northeastern Agricultural and Resource Economics Association Annual Meeting, Annapolis, MD
- 2022 University of Connecticut Graduate Research Forum, Storrs, CT.
- 2019 Agricultural & Applied Economics Association Annual Conference, Atlanta, GA.

LEADERSHIP EXPERIENCE

University of Colorado Denver, CO

President, Chinese Students and Scholars Association *Sep. 2012-Aug. 2013*

- Organized events to establish an environment for students to involve in the campus culture.
- Coordinated with various on and off campus departments including Chinese Consulate and organized fund-raising events.

SKILLS

- Language/Software: Python, Stata, SQL, JavaScript Expression, Regular Expression, Tableau
- Python Libraries: Scikit-learn, NumPy, Pandas, Matplotlib, TensorFlow, Keras
- Machine Learning: Decision Tree, Random Forest, Gradient Boosting, K-Nearest Neighbors (KNN), Word-Embedding, Neural Networks, Content-Based Filtering.
- Causal Inference: Instrumental Variable (IV), Difference-in-Difference (DID), Propensity Score Matching (PSM)