

Rui Guo (Barney Guo)

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Education

B.S., Statistics and Analytics (*Honors*), University of North Carolina at Chapel Hill, 2025

B.S., Information Science, University of North Carolina at Chapel Hill, 2025

Research and Interesting Fields

Machine Learning, Deep Learning, Regression Analysis, Data Visualization, Optimization, Game Design

Experience

Data Scientist Intern, A Round Entertainment, Jersey City, NJ — 2024.02-2024.07

- Collected, built, and refined a comprehensive dataset ,by *Excel*, *MySQL*, tracking Korean entertainment performances in the U.S., focusing on concerts, fan events, and cultural festivals.
- Developed models to analyze the economic impact of Korean performers in the U.S., focusing on audience demographics, ticket sales, and market expansion opportunities, using *R* for statistical analysis and modeling.
- Worked with cross-functional teams to align data strategies with business objectives, contributing to promotional and marketing strategies based on data-driven insights, utilizing Tableau or Python for data visualization to present key findings.

Data Scientist Intern, People's Insurance Company of China, Chengdu, Sichuan — 2023.06-2023.08

- Compiled a comprehensive dataset using *Excel* to cover various insurance products, such as life insurance, health insurance, vehicle insurance, and property insurance. Focused on accurately collecting claims, policyholder demographics, and regional statistics across the entire Sichuan province.
- Conducted in-depth data analysis using *R* to uncover trends in claim patterns, fraud detection, and customer behavior, providing valuable insights for risk management and policy adjustments.
- Leveraged data visualization tools, *Tableau*, to create clear and informative visual reports, aiding senior management in understanding complex datasets and supporting strategic decision-making.

Academics

Research Assistant at the Visual Analysis and Communication Laboratory — 2024.05-Present

- Utilized the *D3.js* package to implement interactive visualization methods aimed at supporting more efficient, effective, and intuitive information analysis and communication.

- Primarily assisted in the *Modeling* and *Leveraging Analytics* focus during exploratory visual analysis research, with current work focused on applying these techniques to studies related to smoking cessation, enhancing user focus and insight generation in this area of health-related visual data exploration.

Supervised by Dr. David Gotz, School of Information and Library Science

ECON400 Undergraduate Learning Assistant — 2023.12-Present

- Held regular office hours, averaging 8 students per week, to explain homework assignments and clarify student questions, also assisted in class with Poll Questions and provided support to students.
- Created ULA Supplemental Resources using *LaTeX* and *Markdown*, including study materials and practice problems to aid student learning and wrote step-by-step solutions using helping students better understand complex questions and solve problems efficiently.
- Led review sessions before exams, helping students prepare by covering important topics and proctored exams to ensure smooth and fair administration.

Supervised by Dr. Chris Handy, Department of Economics

Research

“Optimizing Board Control Strategies Using Machine Learning in Hearthstone” — 2024.08-Present

- Collaborating on the development of an optimization algorithm for an autonomous Hearthstone bot by *Gurobi*, aimed at enabling the bot to play cards automatically with optimal strategies focused on board control.
- Planning to design and test multiple machine learning models that will allow the bot to evaluate game states and select the most advantageous card in any scenario. This will involve continuous testing, tuning, and improvement using real in-game data.
- Future work includes applying reinforcement learning techniques to train the bot through repeated gameplay simulations, helping it refine its strategies over time and improve decision-making efficiency.

Supervised by Dr. William Lassiter, Department of Statistics and Operations Research

“Parental Situations and Educational Backgrounds Collectively Shape The Educational Achievements Of Individuals” — 2024.04-2024.09

- Conducted regression analysis, focusing on independent variables such as parental education and household income, and exploring interactions between variables to analyze their impact on educational outcomes.
- Employed logistic regression models to examine binary outcomes related to educational attainment, specifically investigating the likelihood of completing higher education based on different parental and economic factors.

Supervised by Dr. Chris Handy, Department of Economics

Project

“Exploring Wage Trends and Economic Impacts of the H-1B Visa” — 2023.09-2024.01

- Analyzed a comprehensive H-1B visa dataset with over 3.1 million records, using advanced statistical methods such as multiple linear and ridge regression to explore factors influencing wage levels across industries and regions.
- Synthesized data transformations to account for variables like state tax burdens, regional price parities, and housing costs, offering insights into the economic attractiveness of U.S. states for H-1B workers and improving wage prediction accuracy.

Supervised by Dr. Mario Giacomacco, Department of Statistics and Operations Research

“Player Errors, Fatigue, and Their Impact on Cricket Match Outcomes” — 2023.09-2024.11

- Analyzed 7.9 million cricket match samples to explore the impact of unforced errors like 'wides' and 'no-balls' on match outcomes, providing actionable insights for coaching strategies.
- Applied machine learning techniques, improving match result prediction accuracy from 0.49 to 0.538 by incorporating 'margin error' and identifying a positive correlation between team fatigue and error rates, leading to recommendations for physical training enhancements.

Supervised by Dr. Mario Giacomacco, Department of Statistics and Operations Research

Activities

UNC-CH Game Development Club, Artificial Intelligence Club @ UNC

Skills

R, LaTeX, Markdown, Python(Jupyter Lab, NumPy, Gurobi, Julia), HTML, JavaScript(D3.js), MySQL, CSS, JavaScript, Power-BI, Java, Tableau

Listed in order of proficiency ;D

Awards & Certificate

Wesslen Grant for Research in Data Analytics — Awarded \$4000

Tau Sigma National Honor Society

Dean’s List

Society of Actuaries: Exam P

Society of Actuaries: Exam FM

Introduction to Front-End Development from Meta — Coursera

Last updated: Oct 2024