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Ruth Zhang

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EDUCATION

University of Toronto

Toronto, ON

Mathematical Applications in Economics & Finance Specialist, Statistics Minor

Sept 2022 –

- **GPA: 3.99/4.0** (95.2%)
- **Relevant Coursework:** Real Analysis, Partial & Ordinary Differential Equations, Multivariable Calculus, Linear Algebra, Probability, Statistics, Programming, Microeconomics, Macroeconomics, Econometrics, Finance

EXPERIENCE

Research Assistant | University of Toronto

Toronto, ON

Supervisor: Avi Goldfarb (Rotman Chair in Artificial Intelligence)

Jan 2025 – Present

- Performed Exploratory Data Analysis (EDA) in R on over 5,000 procurement records from the Acceleration Consortium's expenditure dataset to identify spending patterns and support data-driven insights.
- Labeled 500 (1% stratified random sample) open-text startup objectives to validate a zero-shot classification Machine Learning algorithm (GPT o3-mini), achieving 71% agreement.
- Compiled journal metadata across 200+ categories and 20+ years, resulting in a structured dataset of 20,000+ entries that enabled critical research on academic publishing trends and misconduct analysis.
- Cross-referenced over 300 funding round records among early-stage, science-based startups at Creative Destruction Lab (CDL) to enable linkage to an external data source for data enhancement.

Teaching Assistant | University of Toronto

Toronto, ON

Courses: MAT135 – Calculus I, MAT136 – Calculus II

Sept 2024 – Present

- Conducted weekly tutorials for classes of 30 students, clarifying complex mathematical concepts.
- Collaborated with course instructors to design and implement strategies for improving student participation.
- Held office hours to provide individual academic support.
- Assisted in grading assignments and exams, and invigilated tests and exams.

Website Designer

Toronto, ON

Co-op

Apr 2021 – Jun 2021

- Developed a user-friendly website for a rental company using HTML, CSS, and JavaScript.
- Designed the SQL database schema, including details about location and customer data.
- Integrated third-party APIs to enhance website features and functionality.

E-commerce Partner

Remote

Freelance

Jan 2020 – Present

- Designed and marketed handwritten fonts for sale on a popular Chinese e-commerce platform.
- Developed marketing strategies to increase visibility of the fonts and achieved sales of over 6,000 copies.

SKILLS

Programming Languages: Python, SQL, JavaScript, R

Technologies: MySQL, HTML/CSS, L^AT_EX, Microsoft Suite (Excel, PowerPoint, Word), Airtable

Soft Skills: Time Management, Critical Thinking, Communication, Self Starter, Collaboration, Attention to Detail.

PROJECTS

- **Raccoon Rampage – Grid-Based Strategy Game:** Implemented a Python game utilizing inheritance, composition, and Abstract Data Types (ADTs). Read and understood complex code, enforced representation invariants, and designed algorithms to manage raccoon movement and recycling bin clusters. Developed methodical debugging and testing habits to ensure correctness.
- **Pixel Art Drawing Program:** Developed a pixel art drawing program in Python, implementing core classes like Pixel, Layer, and Canvas for efficient pixel data manipulation. Integrated features for layer management, upscaling, downscaling, and saving artwork in '.canvas' and '.png' formats.
- **A Poisson Regression on Family Size:** Analyzed the impact of literacy and age at marriage on family size, incorporating regional differences. Used R to apply Poisson regression and GLMs, quantifying relationships and providing insights for demographic and policy discussions.
- **Life Expectancy Regression Analysis:** Conducted a linear regression analysis in R to model the impact of socio-economic factors on life expectancy, including hypothesis testing, confidence interval estimation, ANOVA tests, multicollinearity diagnostics, residual analysis, and validation of model assumptions for robustness and accuracy.
- **Portfolio Optimization Project:** Utilized advanced Excel functions to calculate expected returns, variances, and covariances of stocks; constructed efficient portfolios and optimized asset weights for maximum risk-return ratio.
- **Compatibility Generator:** Developed a Python program that calculates a compatibility score between two individuals based on their names, birthdays, and zodiac signs. The project involved extensive use of Python functions to ensure readability and reusability of the code.
- **Toy Company Financial Report:** Conducted financial analysis for a new toy product at *Tricky Toys*. Used Excel to calculate net present values. Provided strategic insights on production feasibility.

HONORS & AWARDS

- **2024 University of Toronto Scholar:** Awarded to up to 300 undergraduate students based on academic merit.
- **Nanda Choudhry Prize in Economics:** Awarded for the 2023-2024 academic year to a Specialist in Economics earning the highest average mark in required courses for the program during second year of study.
- **2023 & 2024 Dean List Scholar:** Awarded to students who obtain a cGPA of 3.50 or higher.
- **Innis College Alumni And Friends Award:** Awarded to students with outstanding academic performance.
- **Al And Eleanor May Scholarship In Economics:** Awarded based on academic merit.