HAORAN(HARRISON) LI

(202) 779-6530 ◆ haoranli@umd.edu ◆ sites.google.com/umd.edu/haoranli ◆ linkedin.com/in/haoranli2018

EDUCATION

Ph.D. in Mathematics, University of Maryland, Expected Graduation Spring 2024 (GPA 4.0/4.0)

B.S. in Mathematics and Applied Mathematics, Sun Yat-sen University, Graduated Jun 2018 (GPA 3.7/4.0)

- Majored in **Software Engineering** from Aug 2013 - Jun 2014 (GPA 3.7/4.0)
- Courses in Computer Science: Objective Oriented Programming, Data Structures, Introduction to Algorithms

PROJECTS & INTERNSHIPS

Software Engineer Intern, Wolfram|Alpha College Park, Maryland, Jun 2023 – Aug 2023

- Developed step-by-step functions to solve partial sums and sums of 7 types of series in Mathematica, utilizing VS code and Sourcetree, worked within the established framework and protocol of the Wolfram|Alpha Math team.
- Devised efficient algorithms and appropriate code structures, ensuring adaptability not only to standard inputs but also to novel instances with desirable outputs.
- Initiated pull requests, sought peer reviews, iteratively refined them until gaining unanimous approval, and eventually incorporated selected implementations into the Wolfram|Alpha codebase for accessibility by end users.
- Collaborated with internal teams and fellow interns for thorough code reviews and gathered valuable feedback.
- Participated in team meetings to observe and engage in discussions regarding ongoing projects and their progress.

The Erdős Institute Data Science Bootcamp College Park, Maryland, Sep 2022 – Dec 2022

- Performed an in-depth exploratory analysis on 3000,000 orders from over 20,000 Instacart customers.
- Employed PCA and KMeans clustering to categorize customers into 3 groups based on their shopping preferences.
- Developed a customized XGBoost model for specific customer groups, achieving prediction accuracies exceeding 91% with appropriate cut-off values to anticipate the likelihood of future repurchases of various items.
- Delegated tasks into subtasks for every team member and ensured timely and effective communication.

INMAS Machine Learning Workshop College Park, Maryland, Feb 2023

- Employed the re package for pruning and preprocessing TED talk texts, breaking them into smaller segments.
- Applied Word2Vec to convert words into vectors and used a bag-of-words model for average representations.
- Generated 2D graphs of the word vectors, conducting correlation investigation and clustering analyses.
- Trained a three-layered neural network model on 2,000 TED talk texts, capable of labeling them based on categories such as “technology”, “entertainment” and “design”. Attained approximately 80% accuracy on the test set.

INMAS Machine Learning Workshop Baltimore, Maryland, Jan 2023

- Performed a comprehensive feature analysis on the World Happiness Report over the past 15 years, assessing the significance of various features, both objective and subjective, and ultimately identified 5 main contributing factors.
- Conducted a clustering analysis, unveiling that certain variations in global happiness can be explained by categorizing all countries into developing and developed nations.
- Developed a linear regression model and a LightGBM model for forecasting happiness, attaining R2 scores of 0.76 and 0.83, respectively.

SKILLS

- **Programming:** Python, C++, C, Java, MATLAB, Mathematica, MySQL
- **Framework:** scikit-learn, Tensorflow, PyTorch

PUBLICATION & PREPRINT

- **The Lie coalgebra of multiple polylogarithms**. Zachary Greenberg, Dani Kaufman, Haoran Li, Christian K. Zickert. arxiv.org/abs/2211.08337. Journal of Algebra (to appear)
- **Hopf algebras of multiple polylogarithms, and holomorphic one-forms**. Zachary Greenberg, Dani Kaufman, Haoran Li, Christian K. Zickert. arxiv.org/abs/2203.11588

AWARDS & HONORS

- Dean’s Fellowship, University of Maryland
- Hauptman Summer Fellowship, University of Maryland
- Scholarship of Canadian Alumni Association (Hong Kong)