Zhiyuan Song

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Education

University of Virginia Charlottesville, VA

Double Major: B.A. in Computer Science and Applied Statistics *Aug. 2021 – Dec. 2024*

- Overall GPA: 3.894/4.00 | Honor: Dean's List of Distinguished Students

Publication

Supervised Learning for Health Opportunity Index across States Barcelona, Spain

Zhiyuan Song*, Zihan Mei, Liran Li, N. Rich Nguyen* *Aug. 2024 – Aug. 2024*

Accepted by **KDD-UC 2024**, and present the poster at the conference in Barcelona, Spain

Research Experiences

Explaining Clusters of Energy Usage Data Using Auxiliary Information May 2024 – Present

Summer Research Assistant Intern with Prof. S. S. Ravi *Charlottesville, VA*

- Developed tag-based explanations for energy usage clusters using auxiliary household attributes, enhancing the interpretability of clustering results across large synthetic datasets.
- Refined integer linear programming (ILP) methods to optimize cluster descriptors, validating results with statistical analysis and energy distribution patterns for practical insights.

Xenophobia in Large Language Model Feb. 2024 – Aug. 2024

Research Assistant with Prof. Madhav Marathe *Charlottesville, VA*

- Designed a keyword extraction algorithm using Latent Dirichlet Allocation (LDA) and Natural Language Toolkit (NLTK) to analyze xenophobic stereotypes in large language models, boosting analysis efficiency by 90%.
- Automated the creation of 300 test personas and implemented a scalable execution framework on the Rivanna Virtual Environment, enabling simultaneous analysis across multiple AI models.

Supervised Learning for Health Opportunity Index across States Feb. 2024 – Aug. 2024

Research Assistant with Prof. N. Rich Nguyen *Charlottesville, VA*

- Simplified the computation of the Health Opportunity Index (HOI) by developing a Random Forest model, enabling accurate predictions across all 50 U.S. states using publicly available ACS data.
- Validated the model's effectiveness by testing it in Virginia, North Carolina, and California, demonstrating strong correlations with life expectancy and contributing to public health policy applications.

Teaching Experiences

CS4774 - Machine Learning Aug. 2024 – Present

Teaching Assistant with Prof. N. Rich Nguyen *Charlottesville, VA*

- Held weekly 3-hour office hours, assisting over 30 students with machine learning concepts and coding assignments, ensuring their academic success.
- Graded assignments for 240 students, monitored midterm exams, and participated in weekly faculty meetings to ensure smooth course operations.

CS 2120 - Discrete Math and Theory Aug. 2022 – Dec. 2022

Teaching Assistant of Prof. Kevin Sullivan *Charlottesville, VA*

- Held weekly office hours assisting 50 students with discrete math concepts and review sessions, contributing to a 99% course pass rate and receiving several thank-you letters from students.
- Graded assignments, quizzes, and exams for 77 students, and collaborated with faculty in weekly meetings to ensure effective course delivery and support.

Courses & Skills

Coursework: Machine Learning, Autonomous Racing, Database, Software Dev Essentials, Cybersecurity, Discrete Math and Theory, Data Structures and Algorithm, Computer System and Organization, Data Visual and Management

Skills: Python, Java, C, C#, JavaScript, R, SAS, React, Node.js, Flask, AWS, Docker, SQL, Swift, HTML, PyTorch

Interests: Film-editing, Photography, Hip-hop music, Fashion, and Basketball

Languages: Native in Chinese, bilingual proficiency in English