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; Grad App Fund Scholarship

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**, participated as Student Volunteer and present Poster at the ACM KDD 2024 conference.

Research Experiences

Explaining Clusters of Energy Usage Data Using Auxiliary Information May 2024 – Present
Summer Research Assistant Intern under Prof. S. S. Ravi *Charlottesville, VA*
- Developed tag-based explanations for energy usage clusters using 12+ auxiliary household attributes, enhancing the interpretability of unsupervised machine learning clustering results across large synthetic datasets.
- Refined integer linear programming (ILP) methods with Gurobi Solver 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 under 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 under Prof. N. Rich Nguyen *Charlottesville, VA*
- Simplified the computation of the Health Opportunity Index (HOI) by training a Random Forest model, enabling accurate predictions across all 50 U.S. states using publicly available American Community Survey (ACS) data.
- Validated the model's effectiveness by testing it in Virginia, North Carolina, and California, demonstrating positive correlations with life expectancy and contributing to decision-making public health policy guidance.

Teaching Experiences

CS4774 - Machine Learning Aug. 2024 – Present
Teaching Assistant under Prof. N. Rich Nguyen *Charlottesville, VA*
- Held weekly 3-hour one-on-one office hours and Piazza online Question and Answer during the semester, assisting over 50 students with machine learning concepts and coding assignments, ensuring their academic success.
- Graded assignments and exams for 240 students, monitored exams, co-designed the ChatBot LLM assignment with Prof. Nguyen, and participated in weekly faculty meetings to ensure smooth course operations.

CS 2120 - Discrete Math and Theory Aug. 2022 – Dec. 2022
Teaching Assistant under Prof. Kevin Sullivan *Charlottesville, VA*
- Held weekly office hours assisting over 50 students with discrete math concepts and exam 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, Workout and Basketball

Languages: Native in Chinese and Wu/Ningbonese, bilingual proficiency in English