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 | Scholarship: UVA 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%. Confirmed the existence of xenophobic bias in LLMs.
- 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. Reinforced the importance of addressing fairness and bias in AI systems.

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.

HONOR

Dean's List of Distinguished Students — Aug. 2021 – Present

- Full-time students who demonstrate academic excellence, minimum GPA of 3.500, while taking a minimum of 15 credits of graded course work are eligible for the Dean's List of Distinguished Students at the end of each semester.

Professional Experiences

CounselorAI LLM Start-Up
Jan. 2024 – Aug. 2024

Software Engineer & Machine Learning Engineer
Beijing, China

- Developed the front-end using React Native and back-end with Node.js, and deployed the application on Ali Yun Server with a MySQL database, ensuring responsive performance and scalability.
- Delivered a beta version of the application by January 2024, incorporating GPT-3.5-turbo for personalized Mandarin U.S. study support to Chinese students and parents.

Entropinia Designer Brand
May 2023 – Present

Founder
Ningbo, China

- Co-founded Entropinia, a sustainable clothing brand, and secured a legal trademark. Led the design and production of the first season's clothing line in collaboration with my co-founder Dong Chen.
- Designing and developing the official Entropinia Clothing Brand website using Python and Flask, creating an online platform to showcase and promote the brand's unique products and philosophy.

Fit Lab Start-Up
May 2023 – Dec. 2023

Co-Founder
Shanghai, China

- Led the iOS app front-end development using Swift in Xcode, focusing on user profile and map features. Coordinated back-end integration with Spring Boot Java, ensuring seamless interaction between functionalities.
- Organized weekly team meetings and managing the app launch timeline, overseeing the successful implementation of key features like calorie tracking, workout timers, and community posts.

HooHacks Ideathon (Hackathon) 2023
Oct. 2023 – Oct. 2023

Team Lead
Charlottesville, VA

- Led a team of four in developing a secondhand trading platform, spending 7 hours brainstorming, refining, and implementing the project idea within the hackathon timeframe.
- Successfully pitched the platform, receiving an average rating of 8/10 from judges, showcasing the team's creativity and execution under pressure.

Student Game Developer (SGD)
Feb. 2022 – May 2022

Unity Engineer
Charlottesville, VA

- Modeled and equipped a gravity gun for soldiers in a Space VR game, optimizing its movement with VR grips for a more immersive user experience.
- Collaborated on enhancing NPC behaviors, integrating particle and sound effects for physics interactions, and optimizing game elements like lighting and polycount to improve performance and realism.

UVA Student Council
Sept. 2021 – May 2023

Project Lead
Charlottesville, VA

- Filmed promotional videos for Arts Week 2021 and the Student Council Presidential Election 2022, contributing to over 300 student engagement in Arts Week 2021 and a successful election campaign.
- Organized Student Council events, including International Student Thanksgiving Bonding attracting over 30 participants, and led marketing efforts such as designing posters using Canva for major campus initiatives.

Chinese Students and Scholar Society (CSSS)
Sept. 2021 – May 2023

Chair of Publicity and Technology
Charlottesville, VA

- Managed CSSS's official WeChat, growing subscribers by 60% (reaching 4,552), and created mailing lists using UVA's Sympa system to streamline communication, gaining over 100 subscribers.
- Led the development of CSSS's official website using Bootstrap, enhancing the organization's online presence and promoting events through digital content and video production attracting over 200 participants.

Courses

CS Courses: Machine Learning, Autonomous Racing F1/10, Database, Software Dev Essentials, Cybersecurity, Discrete Math and Theory, Data Structures and Algorithm, Computer System and Organization.

Statistics Courses: Statistical Machine Learning, Nonparametric Statistics, Data Visual and Management, From Data to Knowledge, Foundations of Statistics, Data Analysis with Python.

Skills & Interests

Technical Skills: Python, Java, C, C#, JavaScript, R, SAS, React, Node.js, Flask, AWS, Docker, SQL, Swift, HTML, CSS, PyTorch, Final Cut Pro X, Logic Pro X, Adobe PhotoShop, Microsoft Office.

Interests: Film-editing, Photography, Hip-hop Music, Fashion, Workout and Basketball.

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