

# Zhiyuan Song

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## EDUCATION

### University of Virginia

Charlottesville, VA

**Double Major: B.A. in Computer Science and Applied Statistics**

Aug. 2021 – Expected Dec. 2024

- Overall GPA: 3.894/4.00 | Honors: Dean's List of Distinguished Students; UVA Grad App Fund Scholarship

## COURSES

**Selected CS & Stats Courses:** Machine Learning, Autonomous Racing F1/10, Database, Software Dev Essentials, Cybersecurity, Discrete Math and Theory, Data Structures and Algorithm, Nonparametric Statistics, Computer System and Organization, Data Visual and Management, Data Analysis with Python, Foundations of Statistics.

## 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 **KDD 2024** conference.

## RESEARCH EXPERIENCES

### Explaining Clusters of Energy Usage Data Using Auxiliary Information

May 2024 – Present

*Summer Research Assistant under Prof. S. S. Ravi*

Charlottesville, VA

- Developed tag-based explanations for energy usage clusters using 12+ auxiliary household attributes, enhanced 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, validated 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, boosted 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, enabled 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, demonstrated 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, assisted over 50 students with machine learning concepts and coding assignments.
- Graded assignments and exams for 240 students, monitored exams, co-designed the ChatBot LLM assignment with Prof. Nguyen, and participated in weekly faculty meetings.

### 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, contributed to a 99% course pass rate and received 3 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.

## PROFESSIONAL EXPERIENCES

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### 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, resulted in 100% accuracy rate.
- Organized weekly team meetings and managing the app launch timeline, oversaw 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, spent 7 hours brainstorming, refining, and implementing the project idea within the hackathon timeframe.
- Successfully pitched the platform, received an average rating of 8/10 from judges, placed 3rd in our area's pitch round.

### 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 using Unity, optimized 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 optimized 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.
- Organized Student Council events, including International Student Thanksgiving Bonding attracted 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, gained over 100 subscribers.
- Led the development of CSSS's official website using Bootstrap, enhanced the organization's online presence and promoted events through digital content and video production attracted over 200 participants.

## SKILLS

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

## INTERESTS & LANGUAGES

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

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