

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: 3.908/4.000 | 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 Predicting 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

Research Assistant Intern 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, 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 Predicting Health Opportunity Index

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 offered a decision-making reference for 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 70 students with machine learning concepts and coding assignments.
- Graded assignments and exams for 240 students, monitored exams, designed and created the AI ChatBot Codeathon 3 course assignment, along with the corresponding video tutorial and detailed assignment description.

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 1-hour meetings to ensure effective course delivery and support.

PROFESSIONAL EXPERIENCES

Entropinia Designer Brand

May 2023 – Present

Founder

Ningbo, China

- 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.
- Designed and developed the official Entropinia Clothing Brand website using React and Flask, created an online platform to showcase and promote the brand's unique products and philosophy.

CounselorAI

Jan. 2024 – Aug. 2024

Machine Learning Engineer

Beijing, China

- Fine-tuned the OpenAI GPT-3.5-turbo model using over 5,000 rows of real-world data focused on the specific needs and challenges faced by Chinese students studying abroad in the U.S., ensuring the model's outputs were accurate.
- Developed the front-end using React Native and back-end with Node.js, integrated the fine-tuned model with the product, and deployed the application on Ali Yun Server with MySQL database, ensuring responsive performance.

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 the pitch round.

Fit Lab

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, resulting in a 100% test user satisfaction rate.
- Organized weekly team meetings and managed the app launch timeline, oversaw the successful implementation of key features like calorie tracking, workout timers, and community posts.

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.

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, enhanced the organization's online presence, and promoted events through digital content and video production attracting over 200 participants.

SKILLS

Technical Skills: Python, Java, C, C#, Assembly, JavaScript, HTML/CSS, R, Swift, SAS, SQL, React, Node.js, Spring Boot, Flask, AWS, Git, Docker, Unity, PyTorch, TensorFlow, NumPy, Pandas, Scikit-learn, Transformer models.

INTERESTS & LANGUAGES

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

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

PORTFOLIO LINKS

KDD-UC 2024 Publication: <https://kdd2024.kdd.org/wp-content/uploads/2024/08/14-KDD-UC-Song.pdf>

C4GC Research Summer Internship Poster: https://biocomplexity.dev8.uvaits.virginia.edu/sites/biocomplexity2024/files/2024-09/Zhiyuan_Song-2024_C4GC_Poster.pdf

UVA CS4774 Machine Learning Codeathon 3 Tutorial Video:

<https://youtu.be/tD4eW3q02ZE?si=HqamLALw7t0wT8id>

Personal Website: <https://www.zhiyuansong.com/>

Fit Lab Demo: <https://drive.google.com/file/d/1OmK5Ili0i98ZrJNX-3To6ixDofnVHCS0/view?usp=sharing>