Junhua Huang

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EDUCATION

University of Rochester **Rochester, NY**
BS in Computer Science, BS in Business, Cluster in Studio Art *Anticipated May 2025*
- GPA 3.85 out of 4.00, Dean's list 6/6 semesters
- Undergraduate research scholarship-Schwartz Discover Grant 2022

LEADERSHIP

ACM student Chapter, U of R Computer Science Undergraduate Council **Rochester, NY**
Treasurer *Feb 2024 - Present*
- Managed budgeting, fundraising, and financial reporting while organizing research talks, graduate school panels, and social events like movie nights.
- Facilitated workshops on technical topics such as parallel computing, facial reconstruction, and HCI to enhance undergraduate learning.
- Coordinated event logistics, including food procurement, ensuring alignment with goals and participant satisfaction.

University of Rochester Computer Science Department **Rochester, NY**
Teaching Assistant & workshop Leader - CSC 172 Data Structures and Algorithms *Aug 2023 - May 2024*
Workshop Leader - CSC 171 Introduction to Computer Science *Dec 2022 - May 2023*
- Led weekly seminar workshops with Java and facilitated student discussions, sharpening students' understanding of course materials through collaborative problem-solving and discussion of materials.
- Conducted a pedagogical research project to determine whether extending office hours before and/or after workshops could enhance students' understanding and academic performance.
- Provided regular feedback to professors to improve course design and learning materials.
- Collaborated in the 'Team Learning in Action' project, providing key participant data and insights to support an NSF research initiative.

ENGINEERING EXPERIENCE

Professor Jiebo Luo's lab, U of R Computer Science **Rochester, NY**
Student Researcher *Aug 2024 - Present*
- Contributed to a research project in Professor Jiebo Luo's VIStA Lab, attempting to use machine learning to reconstruct images of an animal from a dataset of images of its skeleton.
- Implemented and adapted machine learning methods from academic papers, modifying and deploying machine learning models on Linux servers for experimental testing and optimization.
- Improved model performance for long domain gaps, such as translating images of animal skeletons to fully rendered animal images by introducing sparse cloud encoders and image encoders with partial diffusion.

Farsee2 **Wuhan, China**
Machine Learning Internship *July 2024 - Sep 2024*
- Designed two innovative methods to reduce the floating component in digital reconstruction models by 40%, using ground truth depth to minimize loss, under the mentorship of PhD Hailong Pan.
- Developed a customizable generation method for parallel computing across multiple machines, enhancing computational efficiency.
- Contributed to the upgrading of the new core algorithm of digital reconstruction software.

Goergen Institute for Data Science, University of Rochester **Rochester, NY**
Student Research *Jan 2024 - Jun 2024*

- Conducted research on generative fairness and bias in large language models (LLMs) within the context of political ideology.
- Developed methods for calculating and evaluating political ideologies to conduct blind testing on LLMs.
- Automated the data collection process using Python and APIs, and optimized the looping method by applying an automation convergence algorithm to save on resource consumption.
- The paper is forthcoming and will be published in the Journal of Political Institutions and Political Economy (**SSRN**: https://ssrn.com/abstract=4907043).

Professor Chengliang Xu's lab, U of R Computer Science **Rochester, NY**
Student Researcher *May 2024 - Aug 2024*

- Contributed to a new computer vision model for Temporal Action Localization task by modifying the model backbone into Mamba structure. Adjust the new dataloader of the model.
- Mentored by Researcher Pinxin Liu to deploy, test, and improve various machine learning tasks; successfully ran and tested related paper codes on Linux servers.
- Modified the ViT model to a Transformer++ structure, making it more suitable for testing and debugging new functionalities by the team.

Wuhan Jingying Haitao Information Technology Co., Ltd **Wuhan, China/Hybrid**
Technical Assistant *Jun 2023 – May 2024*

- Created a biomedical patent database using MySQL to support Dr. Conjing Ran and his Ph.D. Shengshen Liu's research group.
- Improved data collection efficiency by 20% by building an automated web crawler script in Python.
- Collected and labeled 18,000+ entries, contributed to large language model training and deploying.
- Utilized Lucidchart to design Entity Relationship Diagrams(ERDs), encompassing 100+ keys and attributes, eliminated redundancy and improve performance by design in BCNF.

Digital reconstruction of JamesTown, University of Rochester **Rochester, NY**
Research Assistant *May 2022 - Dec 2022*

- Collaborated with Professor Yuhao Zhu, Dr. Jarvis, and team members on a project to digitally reconstruct the Jamestown Settlement and Elmina Castle using low-cost image-based 3-D Virtual Reality reconstruction and modeling techniques.
- Disseminated high-resolution models into similar visual effects, low-space-cost models that could be run in virtual reality environments.
- Utilized software such as Agisoft Metashape and Unity to create detailed 3D models. Conducted screening, cleaning, and restoration of raw image data for 3D modeling and virtual reality applications.

PROJECTS

OpenJDK 16u/21u *May 2024 - Aug 2024*

- Wrote and published a step-by-step installation guide in Github for deploying the JDK-11u Linux testing.
- Tested for the three pull requests which were accepted and two merged to the OpenJDK repository.

IMDB Database *Aug 2023 - Dec 2023*

- Led a team of three in ensuring database compliance and enhanced security, focusing on testing, compatibility assessment, and debugging to prevent injection attacks.
- Implemented a login system and customized functions for CRUD operations based on user type using JavaScript, PHP, MySQL, HTML, Git, and CSS; redesigned the website UI and database security feature.

Body Signals Analysis of Smoking and Drinking *Sep 2023 - Dec 2023*

- Preprocessed over 900k records by selecting relevant attributes through feature engineering and reducing dimensionality with Principal Component Analysis (PCA).
- Developed two machine learning models with 72-81% accuracy for predicting the impact of smoking and drinking on body signals using SVM, XGBoost, and PCS techniques; visualized data trends using Seaborn and Matplotlib to enhance understanding of behavioral patterns.

Bob's Burgers Android mobile App *Jan 2023 - May 2023*

- Solo-developed the Android app, demonstrating proficiency in RecyclerView, API integration, and MVVM architecture, and effective end-to-end app development management.
- Ensured robust app functionality by implementing error handling for invalid API requests, contributing to a seamless user experience.
- Designed a user-friendly interface with attention to color aesthetics and smooth animations, enhancing user engagement and accessibility.

RESEARCH PAPER AND PREPRINTS

- Caliskan, Cantay and Huang, Junhua and Huang, Yiyang and Lin, Ruoxuan and Shan, Wanting, Using Generative AI to Calculate Party Positions: A Comparison of Human Experts and Large Language Models (July 26, 2024). Available at **SSRN**: https://ssrn.com/abstract=4907043

SKILLS

- Technical Skills: Java, Kotlin, Python, C, R, SQL, HTML, CSS, Linux, JavaScript, PHP, MySQL, GIT
- Software: Android Studio, IntelliJ IDEA, Google Suite, Microsoft Office, SolidWorks, Metashape