Han Li

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Education

University of California, Riverside, USA 2022 – Present

Ph.D. in Computer Science and Engineering
Field: Machine Learning, Computer Vision and Generative AI
Advisor: Greg Ver Steeg

Huazhong University of Science and Technology, Wuhan, China 2018 – 2022

B.S. in Artificial Intelligence and Automation
Field: Computer vision and Pattern recognition

Experience

NVIDIA Research(Part Time) 2024 – Present

Project: Training-free High Quality Video Generation with Chain of Diffusion Model Experts

- Built a training-free video generation framework for producing high-quality coherent and consistent videos.

University of California, Riverside 2023 – Present

Research Assistant

Project: Protein flexibility analysis and drug discovery application.

- Developed a method to model protein conformational diversity using pretrained language model embeddings, employing diffusion model to generate intermediate structures. This project improved understanding of protein dynamics by using deep learning to synthesize biologically plausible conformations.

Project: Interpretable Diffusion via Information Decomposition.

- Interpretable Diffusion Via Information Decomposition - Illuminating the fine-grained relationships learned by diffusion models by noticing a precise relationship between diffusion and information decomposition.

Project: Predicting COVID-19 Transmission in Southern California with Machine Learning Methods.

- Developed and validated a GNN-based approach to predict COVID-19 transmission in southern California. Gradient boosting tree method is used to identify the significance of various factors such as socioeconomic, mobility, and population density data, offering actionable insights for public health strategies and interventions.

Huazhong University of Science and Technology 2020 – 2022

Research Assistant

Project: Throwing Behavior Detection Using Human-Moving-Object Interaction.

- Developed and implemented a real-time, vision-based surveillance system that uses a novel method combining multi-object tracking and optical flow techniques to detect throwing behavior accurately under various conditions, facilitating its operation on personal computers without the need for specialized hardware.

Peer-Reviewed Publications

1. Xinru Qiu, **Han Li**, Greg Ver Steeg, and Adam Godzik. Advances in AI for Protein Structure Prediction: Implications for Cancer Drug Discovery and Development. In *Biomolecules 2024*
2. Xianghao Kong, Ollie Liu, **Han Li**, D Yogatama, and Greg Ver Steeg. Interpretable Diffusion via Information Decomposition. In *International Conference on Learning Representations, 2024*
3. **Han Li**, Ran Wei, Wenyu Wang, and Nanpeng Yu. Predicting COVID-19 Transmission in Southern California with Machine Learning Methods In *IEEE International Conference on Big Data Analytics, 2024*

Skills

- Programming: *Python*, *C++*.
- Tools: proficient in *Linux* system; *Pytorch* for deep learning; *OpenCV* for computer vision; *Pytorch_Geometric* for Graph Neural Network; *ArcGIS* for geographic information system.

Miscellaneous

- GitHub: https://github.com/HanLiii
- Languages: English - Professional proficiency, Chinese - Native speaker, Cantonese - Native speaker, Japanese - Limited working proficiency

Honors and Awards

Dean's Distinguished Fellowship Award, University of California Riverside 2022
Outstanding Bachelor Thesis Award, Huazhong University of Science and Technology 2022
Mathematical Contest In Modeling, designated as Finalist, COMAP 2021
1st Prize, National Olympiad in Chemistry, Hubei, China 2017