

Xinru Hua

CONTACT INFORMATION

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SUMMARY

Have 5 years experience of research experience as a CS Ph.D. at Stanford University and 3 industry internships at Waymo, Nvidia, and Adobe. Passionate about applying machine learning algorithms to address real-world challenges while emphasizing statistical fairness and robustness.

Research areas: machine learning accelerated sampling methods in molecular simulation, fairness and robustness of perception systems, generative models (gradient flow, GAN), transfer learning.

EDUCATION

Stanford University **Sep. 2017 - Present**

Ph.D. candidate in Computer Science

- GPA: 3.97, Expected Graduation: February 2024
- Advisors: Professor Jose Blanchet
- Website: <https://huaxinru.github.io>

University of California, Los Angeles

2013 - 2017

B.S. in Applied Mathematics

- Honors program in applied mathematics, Dean's List

INDUSTRY EXPERIENCE

Machine Learning Engineer Intern **June – Sep. 2022**

Planner Team, Waymo LLC

- ❑ Developed algorithms on a large-scale driving dataset to reduce number of data by $x\%$ and make machine learning models feasible
- ❑ Designed, implemented in C++, and tested machine learning algorithms to help self-driving cars to determine the optimal path during onboard driving
- ❑ Improved final metrics of robustness and quality of driving by $x\%$ over non-ML models

Research Intern

June – Sep. 2020

Simulation Team, Nvidia Corporation

- ❑ Developed, profiled and optimized a GPU-based yarn-level cloth simulator in C++ and CUDA
- ❑ Enhanced GPU performance, achieving an over 10x speedup for all the simulation examples

Research Intern

June – Sep. 2018

Research Team, Adobe Inc.

- ❑ Curated a synthetic dataset of both high-fidelity and low-fidelity cloth animation sequences
- ❑ Implemented and optimized generative models, such as autoencoder and GANs, to generate high-fidelity cloth simulation from low-fidelity simulation

PATENT

A patent joint with Ford for "*Human Imperceptible Attacks and Applications to Improve Fairness*"

PUBLICATIONS

X. Hua, R. Ahmad, J. Blanchet, W. Cai, *Accelerated Sampling of Rare Events using a Neural Network Bias Potential*, Accepted at **NeurIPS 2023 Workshop on AI for Accelerated Materials Design (Spotlight)**, 2023.

X. Hua, T. Nguyen, T. Le, J. Blanchet, V. Anh Nguyen, *Dynamic Flows on Curved Space Generated by Labeled Data*. Proceedings of the Thirty-Second International Joint Conference on Artificial Intelligence, **IJCAI**, 2023.

X. Hua, H. Xu, J. Blanchet and V. A. Nguyen, *Human Imperceptible Attacks and Applications to Improve Fairness*, 2022 Winter Simulation Conference (**WSC**), 2022.

R. Wu, J. Zhang, J. Leaf, **X. Hua**, A. Qu, C. Harvey, E. Holtzman, J. Ko, B. Hagan, D. James, F. Guimbretiere, S. Marschner, *Weavecraft: An Interactive Design and Simulation Tool for 3D Weaving*, ACM Trans. Graph, **Siggraph**, 2020.

TEACHING
EXPERIENCE

Teacher at Stanford AI4ALL, June-July 2023: AI4ALL, founded by Prof. Feifei Li, is an initiative dedicated to providing underrepresented high school students with exposure to diverse AI research topics. Within this program, I instructed a cohort of students on a variety of NLP algorithms and mentored them on a twitter classification project.

Course Assistant:

- CS 229: Machine Learning (3 times)
- CS 148: Introduction to Computer Graphics and Imaging
- CS 205L: Continuous Mathematical Methods with an Emphasis on Machine Learning
- CS 348C: Computer Graphics: Animation and Simulation
- CS 348I: Computer Graphics in the Era of AI
- MS&E 121: Introduction to Stochastic Modeling
- MS&E 223: Simulation

LANGUAGES

Python (5 years), C++ (2 years), Matlab, CUDA, Java **Libraries:** PyTorch, TensorFlow

ACADEMIC SERVICE Reviewed for ICML 2022, 2023, NeurIPS 2022, 2023, and ICLR 2024

FELLOWSHIP &
SCHOLARSHIP

School of Engineering Fellowship (2017-2018)
Support from Girsky Fund (Summer 2015, 2016)

REFERENCES

- Jose Blanchet, Professor of Management Science and Engineering at Stanford University
- Wei Cai, Professor of Mechanical Engineering at Stanford University
- Viet Anh Nguyen, Assistant Professor of Systems Engineering and Engineering Management at Chinese University of Hong Kong