Deqing Fu

Email: deqingfu@usc.edu   Address: Ginsburg Hall, USC, Los Angeles, CA 90089
Website: www.fudeq.ing   Office: GCS 403E

Education

University of Southern California   2022 - Present
Ph.D. in Computer Science
Advisors: Vatsal Sharan & Robin Jia

Simons Institute at UC Berkeley   Fall 2024
Visiting Graduate Student
Program: Modern Paradigms in Generalization

University of Chicago   2020 - 2022
M.S. in Statistics

University of Chicago   2016 - 2020
B.S. in Mathematics with Honors
B.S. in Computer Science with Honors
B.A. in Statistics

Experience

Research Scientist Intern $\rightarrow$ **Student Researcher**, Meta   May – Dec., 2024
Team: Llama Team @ Meta GenAI.
Host: Lawrence Chen; Peers: Tong Xiao, Rui Wang, and Pengchuan Zhang.

Software Engineering Intern, Google   Summer 2021, 2022, 2023
Teams: Image Search (Lens); Knowledge Engine; Bard Multilingual.

Summer Student Researcher, Argonne National Laboratory   Summer 2017
Hosts: Paul Hovland & Sri Hari Krishna Narayana.

Selected Publications

Transformers Learn to Achieve Second-Order Convergence Rates for In-Context Linear Regression
Deqing Fu, Tian-Qi Chen, Robin Jia, Vatsal Sharan
SoCalNLP Symposium 2023 Best Paper Award   NeurIPS 2024

Pre-trained Large Language Models Use Fourier Features to Compute Addition
Tianyi Zhou, Deqing Fu, Vatsal Sharan, Robin Jia   NeurIPS 2024

IsoBench: Benchmarking Foundation Models on Isomorphic Representations
Deqing Fu*, Ruohao Guo*, Ghazal Khalighinejad*, Ollie Liu*, Bhuwan Dhingra, Dani Yogatama, Robin Jia, Willie Neiswanger   COLM 2024

All Papers

⋆ denotes
equal contribution

TLDR: Token-Level Detective Reward Model for Large Vision Language Models

<u>Deqing Fu</u>, Tong Xiao, Rui Wang, Wang Zhu, Pengchuan Zhang, Guan Pang, Robin Jia, Lawrence Chen

Under Review

VisualLens: Personalization through Visual History

Wang Bill Zhu, <u>Deqing Fu</u>, Kai Sun, Yi Lu, Zhaojiang Lin, Seungwhan Moon, Kanika Narang, Mustafa Canim, Yue Liu, Anuj Kumar, Xin Luna Dong

Under Review

Transformers Learn to Achieve Second-Order Convergence Rates for In-Context Linear Regression

<u>Deqing Fu</u>, Tian-Qi Chen, Robin Jia, Vatsal Sharan
SoCalNLP Symposium 2023 Best Paper Award

NeurIPS 2024

Pre-trained Large Language Models Use Fourier Features to Compute Addition

Tianyi Zhou, <u>Deqing Fu</u>, Vatsal Sharan, Robin Jia

NeurIPS 2024

IsoBench: Benchmarking Foundation Models on Isomorphic Representations

<u>Deqing Fu</u>⋆, Ruohao Guo⋆, Ghazal Khalighinejad⋆, Ollie Liu⋆, Bhuwan Dhingra, Dani Yogatama, Robin Jia, Willie Neiswanger

COLM 2024

Transformers Learn Low Sensitivity Functions: Investigations and Implications

Bhavya Vasudeva⋆, <u>Deqing Fu</u>⋆, Tianyi Zhou, Elliot Kau, You-Qi Huang, Vatsal Sharan

Under Review

DeLLMa: Decision Making Under Uncertainty with Large Language Models

Ollie Liu⋆, <u>Deqing Fu</u>⋆, Dani Yogatama, Willie Neiswanger

Under Review

DreamSync: Aligning Text-to-Image Generation with Image Understanding Feedback

Jiao Sun⋆, <u>Deqing Fu</u>⋆, Yushi Hu⋆, Su Wang, Royi Rassin, Da-Cheng Juan, Dana Alon, Charles Herrmann, Sjoerd van Steenkiste, Ranjay Krishna, Cyrus Rashtchian

Under Review

SCENE: Self-Labeled Counterfactuals for Extrapolating to Negative Examples

<u>Deqing Fu</u>, Ameya Godbole, Robin Jia

EMNLP 2023

Harnessing the Conditioning Sensorium for Improved Image Translation

	Cooper Nederhood, Nicholas Kolkin, <u>Deqing Fu</u>, Jason Salavon	ICCV 2021

Awards	**SoCalNLP Symposium 2023 Best Paper Award**, SoCalNLP	2023
	Provost's Fellowship, University of Southern California	2022
	Susanne H. Rudolph Scholarship, University of Chicago	2020
	Liew Family College Research Fellows Fund, University of Chicago	2020
	Dean's List, University of Chicago	2016-2020

Services	**Reviewer** for ICLR 2025, NeurIPS 2024, COLM 2024, EMNLP (2023, 2024), ACL ARR 2024, ECCV 2022, CVPR (2023, 2024, 2025)	
	Organizer of USC AI Safety Club	Jan 2024 – Present

Students Supervised	**Master's and Undergraduate Students**	
	Gustavo Carvalho (USC MS)	Feb 2024 – Present
	Qilin Ye (USC UG ⇀ Duke MS)	Sep 2023 – Present
	Woody Gan (USC UG)	Sep 2023 – Present
	You-Qi Huang (USC UG)	Sep 2023 – Mar 2024
	Elliot Kau (USC MS)	Sep 2023 – Mar 2024
	Tian-Qi Chen (USC MS)	Mar 2023 – Sep 2023

Teaching Experience	**Teaching Assistant**, CSCI 467: Introduction to Machine Learning	
	University of Southern California, Los Angeles, CA	Spring 2025
	Teaching Assistant, CSCI 566: Deep Learning and its Applications	
	University of Southern California, Los Angeles, CA	Spring 2023
	Teaching Assistant, BUSN 41301: Statistical Insight	
	University of Chicago, Chicago, IL	Fall 2021
	Grader, CMSC 31230: Fundamentals of Deep Learning	
	University of Chicago, Chicago, IL	Fall 2021
	Grader, STAT 24620: Multivariate Statistics and Data Analysis	
	University of Chicago, Chicago, IL	Spring 2020
	Grader, MATH 20100: Mathematical Methods for Physical Science	
	University of Chicago, Chicago, IL	Winter 2019
	Grader, MATH 19520: Mathematical Methods for Social Science	
	University of Chicago, Chicago, IL	Fall 2018
	Grader, MATH 20300: Analysis in Rn - I	
	University of Chicago, Chicago, IL	Spring 2018
	Course Assistant, MATH 15300: Calculus - III	

	University of Chicago, Chicago, IL	Winter 2018

Course Assistant, MATH 15200: Calculus - II
University of Chicago, Chicago, IL   Fall 2017

Invited Talk   **Guest Lecturer**, DSO 575: Driving Business Transformation with GenAI
Marshall School of Business, USC   Fall 2024

Skills   C/C++, Python, LaTeX, MATLAB, R, Java, CUDA
PyTorch, TensorFlow, Keras, JAX, HuggingFace