Yutong (Kelly) He

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Education

2022 – 2027 (Expected) **Carnegie Mellon University** – Pittsburgh, PA
PhD in Machine Learning, School of Computer Science
Advisors: Zico Kolter, Ruslan Salakhutdinov

2019 – 2022 **Stanford University** – Stanford, CA
MS in Computer Science (with Distinction in Research)
Advisors: Stefano Ermon
GPA: 4.20/4.30

2015 – 2019 **University of Rochester** – Rochester, NY
BS in Mathematics (with Highest Distinction)
BS in Data Science (with Highest Distinction)
GPA: 3.95/4.00

Honors and Scholarships

2022 Outstanding Paper at ICLR 2022
2021 2nd place in Alexa Prize Socialbot Grand Challenge 4
2020 Siebel Scholar 2020-2021
2019-2020 Best Project Awards at Stanford CS 229, CS 224N, CS 230
2019 Doris Ermine Smith Award for Achievement in Mathematics
2019 Phi Beta Kappa
2018 University of Rochester Research Presentation Award
2018 University of Rochester Discovery Grant
2017 Xerox Engineering Research Fellowship

Publications

2023 **Manifold Preserving Guided Diffusion**
Yutong He*, Naoki Murata*, Chieh-Hsin Lai, Yuhta Takida, Toshimitsu Uesaka, Dongjun Kim, Wei-Hsiang Liao, Yuki Mitsufuji, J. Zico Kolter, Ruslan Salakhutdinov, Stefano Ermon
Preprint

2023 **Towards reporting bias in visual-language datasets: bimodal augmentation by decoupling object-attribute association**
Qiyu Wu, Mengjie Zhao, **Yutong He**, Lang Huang, Junya Ono, Hiromi Wakaki, Yuki Mitsufuji
arXiv:2310.01330

2023 **Consistency Trajectory Models: Learning Probability Flow ODE Trajectory of Diffusion**
Dongjun Kim, Chieh-Hsin Lai, Wei-Hsiang Liao, Naoki Murata, Yuhta Takida, Toshimitsu Uesaka, **Yutong He**, Yuki Mitsufuji, Stefano Ermon
arXiv:2310.02279

2023 **Localized Text-to-Image Generation for Free via Cross Attention Control**
Yutong He, Ruslan Salakhutdinov, J. Zico Kolter
arXiv:2306.14636

2023 **CSP: Self-Supervised Contrastive Spatial Pre-Training for Geospatial-Visual Representations**
Gengchen Mai, Ni Lao, **Yutong He**, Jiaming Song, Stefano Ermon
International Conference on Machine Learning (ICML 2023)

2022 **SatMAE: Pre-training Transformers for Temporal and Multi-Spectral Satellite Imagery**
Yezhen Cong*, Samar Khanna*, Chenlin Meng, Patrick Liu, Erik Rozi, **Yutong He**, Marshall Burke, David B. Lobell, Stefano Ermon
Neural Information Processing Systems (NeurIPS 2022)

2022 **Understanding Economic Development in Rural Africa using Satellite Imagery, Building footprints and Deep Models**
Amna Elmustafa, Erik Rozi, **Yutong He**, Gengchen Mai, Stefano Ermon, Marshall Burke, David Lobell
International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL 2022)

2022 **Neural Generation Meets Real People: Building a Social, Informative Open-Domain Dialogue Agent**
Ethan A. Chi, Caleb Chiam, Trenton Chang, Swee Kiat Lim, Chetanya Rastogi, Alexander Iyabor, **Yutong He**, Hari Sowrirajan, Avanika Narayan, Jillian Tang, Haojun Li, Ashwin Paranjape, Christopher D. Manning
The 23rd Annual Meeting of the Special Interest Group on Discourse and Dialogue (SIGDIAL 2022)

2022 **Comparing Distributions by Measuring Differences that Affect Decision Making**
Shengjia Zhao*, Abhishek Sinha*, **Yutong He***, Aidan Perreault, Jiaming Song, Stefano Ermon
International Conference on Learning Representations (ICLR 2022)
Outstanding Paper Award (Top 7/4492)

2022 **SDEdit: Guided Image Synthesis and Editing with Stochastic Differential Equations**
Chenlin Meng, **Yutong He**, Yang Song, Jiaming Song, Jiajun Wu, Jun-Yan Zhu, Stefano Ermon
International Conference on Learning Representations (ICLR 2022)

2021 **Spatial-Temporal Super-Resolution of Satellite Imagery via Conditional Pixel Synthesis**
Yutong He, Dingjie Wang, Nicholas Lai, William Zhang, Chenlin Meng, Marshall Burke, David B. Lobell, Stefano Ermon
Neural Information Processing Systems (NeurIPS 2021)

2021 **Tracking Urbanization in Developing Regions with Remote Sensing Spatial-Temporal Super-Resolution**
Yutong He*, William Zhang*, Chenlin Meng, Marshall Burke, David B. Lobell, Stefano Ermon
Neural Information Processing Systems (NeurIPS 2021) workshop on Machine Learning for the Developing World (ML4D)

2021 **Neural, Neural Everywhere: Controlled Generation Meets Scaffolded, Structured Dialogue**
Ethan A. Chi, Caleb Chiam, Trenton Chang, Swee Kiat Lim, Chetanya Rastogi, Alexander Iyabor, **Yutong He**, Hari Sowrirajan, Avanika Narayan, Jillian Tang, Haojun Li, Ashwin Paranjape, Christopher D. Manning
Alexa Prize Proceedings 2021

2020 **Fine-grained Image-to-Image Transformation towards Visual Recognition**
Wei Xiong, **Yutong He**, Yixuan Zhang, Wenhan Luo, Lin Ma, and Jiebo Luo
International Conference on Computer Vision and Pattern Recognition (CVPR 2020)

2020 **Motion-based Handwriting Recognition and Word Reconstruction**
Junshen Kevin Chen*, Wanze Xie*, **Yutong He***
arXiv:2101.06025

Industry Experience

Summer 2023 **Sony Group Corporation (Student Research Scientist Intern)** – Tokyo, Japan
Worked in Sony Creative AI team on controllable generation methods.

Summer 2020 **Adobe Inc. (Machine Learning Engineer Intern)** – San Jose, CA
Worked in Sensei & Search team on visual-textual search and recommendation for E-commerce.

Teaching Experience

Spring 2023 **10707: Advanced Deep Learning (Carnegie Mellon University)**
Guest lecturer on Diffusion Models

Fall 2022 **10417: Intermediate Deep Learning (Carnegie Mellon University)**
Guest lecturer on Diffusion Models

Winter 2022 **CS 228: Probabilistic Graphical Models (Stanford)**
TA and lecturer on Markov chain Monte Carlo

Fall 2021 **CS 236: Deep Generative Models (Stanford)**
TA and lecturer on neural networks

Winter 2021 **CS 228: Probabilistic Graphical Models (Stanford)**
TA and lecturer on Markov chain Monte Carlo

Spring 2019 **CSC 249/449: Machine Vision (University of Rochester)**
Teaching Assistant

Fall 2018 **DSC 262/462: Computational Introduction to Statistics (University of Rochester)**
Teaching Assistant

Spring 2018 **CSC 242/442: Data Mining (University of Rochester)**
Teaching Assistant

Spring 2018 **MTH 150: Discrete Mathematics (University of Rochester)**
Teaching Assistant

Fall 2017 **CSC 242/442: Artificial Intelligence (University of Rochester)**
Teaching Assistant

Fall 2017 **CSC 261/461: Database System (University of Rochester)**
Teaching Assistant

Fall 2017 **MTH 201: Introduction to Probability (University of Rochester)**
Teaching Assistant

Spring 2017 **CSC 172: Data Structures and Algorithms (University of Rochester)**
Workshop Leader

Spring 2017 **MTH 162: Calculus IIA (University of Rochester)**
Workshop Leader

Fall 2016 **CSC 171: Introduction to Computer Science (University of Rochester)**
Workshop Leader

Fall 2016 **MTH 141: Calculus I (University of Rochester)**
Workshop Leader

Leadership and Mentorship

2021 **Stanford AI4ALL (Computer Vision Mentor)**
Led a group of high school students from under-represented populations to complete a hands-on research project in computer vision, and provided them exposure to a variety of AI topics, in-depth discussions of cutting-edge AI research, and exploration of the humanistic and societal impact of AI.

2021 **Stanford CURIS Program for Undergraduate Research (Mentor)**
Mentored a group of undergraduate students on artificial intelligence research projects.

2020 **Stanford Summer Undergraduate Research Fellowship (Graduate Student Mentor)**
Advised Summer Undergraduate Research Fellowship (SURF) scholars to reflect on their summer research/professional development experience, learn about the graduate school application process, and gain insight into graduate student life, specifically at Stanford.

2018-2019 **University of Rochester Computer Science Undergraduate Council (President)**

- Served as a representative of the undergraduate students in computer science community in University of Rochester and a bridge of communication between computer science undergraduate students and the graduate students, faculty members, other departments and other schools.
- Hosted university hackathons, department town halls, social events, and panels.
- Organized teams to attend international programming competitions.

2018-2019 **University of Rochester Goergen Institute for Data Science (Peer Advisor)**
Advised students on declaring majors, making connections with faculty members, reviewing research opportunities, and exploring interdisciplinary study.

2016-2019 **University of Rochester Computer Science Undergraduate Council (Tutor)**
Held weekly voluntary tutoring session for computer science, mathematics, statistics courses.

Technical Skills

Programming languages
Python, Java, R, SQL, Bash, C/C++, MATLAB, CUDA, Lisp, HTML/CSS, JavaScript

Software
LaTeX, Git, PyTorch, TensorFlow, Keras, Scikit-learn, RStudio, Jupyter Lab/Notebook, Gdb, Valgrind, Adobe Photoshop, Adobe Premiere Pro

Languages
Chinese (fluent), English (fluent), Japanese (intermediate), Spanish (elementary)