

Feng Gao

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EDUCATION

University of California, Los Angeles, Los Angeles, California, USA

Sep 2017 – Jun 2022

- Ph.D. in Statistics
 - Adviser: Prof. Mark S. Handcock, Prof. Ying Nian Wu
 - Ph.D. Thesis: Multi-Modal Robotic Learning, Reasoning and Planning
 - Research Areas: Artificial Intelligence, Computer Vision, Robotics
 - Focus Topics: Robotic Learning, Multi-Modal Visual Reasoning, Robot Planning
 - Funded by: DARPA SIMPLEX, DARPA XAI, ONR-MURI
 - Collaborated with Jet Propulsion Laboratory

University of Southern California, Los Angeles, California, USA

Aug 2015 – May 2017

- M.S. in Computer Science

University of Electronic Science and Technology of China (UESTC)

Sep 2011 – Jun 2015

- B.Eng. in Software Engineering
 - Graduated with various honors

RESEARCH EXPERIENCE

Amazon

- Applied Scientist (Rufus Multi-Modal team) Jul 2022 – Present
 - Core member of Rufus-MM, worked on MM pre-training, IFT, MM scaling law, alignment and evaluation.
 - Trained 7B-100B M-LLM for Amazon shopping production.
 - Multiple paper accepted in CVPR, NeurIPS, ECCV, EMNLP on M-LLM, T2I, T2-3D.
 - Embodied AI and text to image generation (prior to Rufus in Alexa)
- Applied Scientist Intern Jun 2021 – Nov 2021
 - One paper accepted by CVPR2022 in vision-language reasoning.

Center for Vision, Cognition, Learning and Autonomy, UCLA

- Graduate Student Researcher, Statistics Department Sep 2017 – Dec 2020
 - Research Interest: Artificial Intelligence in Robotics
 - Supervisor: Prof. Song-Chun Zhu
 - Focus Areas: Robotics, Computer Vision
- Visiting Graduate Researcher, Statistics Department Jul 2016 – Aug 2017
 - Project: Human Robot Collaboration

International Center for Artificial Intelligence and Robot Autonomy (CARA)

Sep 2017 – Sep 2019

- Robotics Research Engineer Intern
 - Research Projects: Visual Abstraction Reasoning, Human-Robot Collaboration
 - Supervisor: Dr. Yixin Zhu

PUBLICATIONS

JOURNALS

- A Tale of Two Explanations: Enhancing Human Trust by Explaining Robot Behavior
M. Edmonds*, **F. Gao***, H. Liu*, X. Xie*, S. Qi, B. Rothrock, Y. Zhu, Y.N. Wu, H. Lu, S.-C. Zhu
Science Robotics 18 Dec 2019: Vol. 4, Issue 37, eaay4663 (* Joint First Authors)
- Dark, Beyond Deep: A Paradigm Shift to Cognitive AI with Human-like Commonsense
Y. Zhu, T. Gao, L. Fan, S. Huang, M. Edmonds, H. Liu, **F. Gao**, C. Zhang, S. Qi, Y.N. Wu, J.B. Tenenbaum, S.-C. Zhu
Engineering, Special Issue on Artificial Intelligence, 2020

CONFERENCES

- M-LLM Based Video Frame Selection for Efficient Video Understanding
K. Hu, **F. Gao**, X. Nie, P. Zhou, S. Tran, T. Neiman, L. Wang, M. Shah, R. Hamid, B. Yin, T. Chilimbi
Conference on Computer Vision and Pattern Recognition 2025 (CVPR 2025)
- ARM: Appearance Reconstruction Model for Relightable 3D Generation
X. Feng, C. Yu, Z. Bi, Y. Shang, **F. Gao**, H. Wu, K. Zhou, C. Jiang, Y. Yang
Conference on Computer Vision and Pattern Recognition 2025 (CVPR 2025)

- Atlas3D: Physically Constrained Self-Supporting Text-to-3D for Simulation and Fabrication
Y. Chen, T. Xie, Z. Zong, X. Li, **F. Gao**, Y. Yang, Y.N. Wu, C. Jiang
38th Annual Conference on Neural Information Processing Systems (NeurIPS 2024)
- Flow Priors for Linear Inverse Problems via Iterative Corrupted Trajectory Matching
Y. Zhang, P. Yu, Y. Zhu, Y. Chang, **F. Gao**, Y.N. Wu, O. Leong
38th Annual Conference on Neural Information Processing Systems (NeurIPS 2024)
- Skews in the Phenomenon Space Hinder Generalization in Text-to-Image Generation
Y. Chang, Y. Zhang, Z. Fang, Y.N. Wu, Y. Bisk, **F. Gao**
The 18th European Conference on Computer Vision (ECCV 2024)
- GarmentDreamer: 3DGS Guided Garment Synthesis with Diverse Geometry and Texture Details
B. Li*, X. Li*, Y. Jiang*, T. Xie, **F. Gao**, H. Wang, Y. Yang, C. Jiang
International Conference on 3D Vision 2025 (3DV 2025)
- VR-GS: A Physical Dynamics-Aware Interactive Gaussian Splatting System in Virtual Reality
Y. Jiang, C. Yu, T. Xie, Y. Feng, H. Wang, M. Li, H. Lau, **F. Gao**, Y. Yang, C. Jiang
ACM SIGGRAPH 2024
- Learning non-Markovian Decision-Making from State-only Sequences
A. Qin, **F. Gao**, Q. Li, S.-C. Zhu, S. Xie
37th Conference on Neural Information Processing Systems (NeurIPS 2023)
- Masked Path Modeling for Vision-and-Language Navigation
Z. Dou, **F. Gao**, Nanyun Peng
The 2023 Conference on Empirical Methods in Natural Language Processing 2023 (EMNLP 2023)
- GIVL: Improving Geographical Inclusivity of Vision-and-Language Models with Pre-Training Methods
D. Yin, **F. Gao**, G. Thattai, M. Johnston, K.W. Chang
Conference on Computer Vision and Pattern Recognition 2023 (CVPR 2023)
- Transform-Retrieve-Generate: Natural Language-Centric Outside-Knowledge Visual Question Answering
F. Gao, Qing Ping, Govind Thattai, Aishwarya Reganti, Ying Nian Wu, Prem Natarajan
Conference on Computer Vision and Pattern Recognition 2022 (CVPR 2022)
- Learning Perceptual Inference by Contrasting
C. Zhang, B. Jia, **F. Gao**, Y. Zhu, H. Lu, S.-C. Zhu
33rd Conference on Neural Information Processing Systems (NeurIPS 2019, spotlight)
- VRGym: A Virtual Testbed for Physical and Interactive AI (Best Paper Award)
X. Xie, H. Liu, Z. Zhang, Y. Qiu, **F. Gao**, S. Qi, Y. Zhu, S.-C. Zhu
Association for Computing Machinery Turing Celebration Conference (ACM TURC 2019)
- RAVEN: A Dataset for Relational and Analogical Visual Reasoning
C. Zhang*, **F. Gao***, B. Jia, Y. Zhu, S.-C. Zhu (* Joint First Authors)
Conference on Computer Vision and Pattern Recognition 2019 (CVPR 2019)
- Unsupervised Learning of Hierarchical Models for Hand-Object Interactions using Tactile Glove
X. Xie, H. Liu, M. Edmonds, **F. Gao**, S. Qi, Y. Zhu, B. Rothrock, S.-C. Zhu
IEEE International Conference on Robotics and Automation 2018 (ICRA 2018)
- Feeling the Force: Integrating Force and Pose for Fluent Discovery through Imitation Learning to Open Medicine Bottles
M. Edmonds*, **F. Gao***, X. Xie, H. Liu, S. Qi, Y. Zhu, B. Rothrock, S.-C. Zhu (* Joint First Authors)
30th International Conference on Intelligent Robots and Systems (IROS 2017)
- A Glove-based System for Studying Hand-Object Manipulation via Pose and Force Sensing
H. Liu, X. Xie, M. Millar, M. Edmonds, **F. Gao**, Y. Zhu, V. J. Santos, B. Rothrock, S.-C. Zhu
30th International Conference on Intelligent Robots and Systems (IROS 2017)

WORKSHOPS

- Planning as In-Painting:
A Diffusion-Based Embodied Task Planning Framework for Environments under Uncertainty
C. Yang, T. Wu, X. Gao, K.W. Chang, **F. Gao**
38th Conference on Neural Information Processing Systems, OWA workshop (NeurIPS 2024 OWA)

- Towards Reasoning-Aware Explainable VQA
R. Vaideswaran, **F. Gao**, A. Mathur, G. Thattai
36th Conference on Neural Information Processing Systems, TSRML workshop (NeurIPS 2022 TSRML)

PRE-PRINTS

- ARM: Appearance Reconstruction Model for Relightable 3D Generation
X. Feng, C. Yu, Z. Bi, Y. Shang, **F. Gao**, H. Wu, K. Zhou, C. Jiang, Y. Yang
arXiv:2411.10825
- TPA-Net: Generate A Dataset for Text to Physics-based Animation
Y. Qiu, **F. Gao**, M. Li, G. Thattai, Y. Yang, C. Jiang
arXiv:2211.13887

PRESENTATIONS **Oral Presentations**

- Feeling the Force: Integrating Force and Pose for Fluent Discovery through Imitation Learning to OpenMedicine Bottles
IROS 2017, Vancouver, Canada

Poster Presentations

- GIVL: Improving Geographical Inclusivity of Vision-and-Language Models with Pre-Training Methods
CVPR 2023, Virtual Presentation, Vancouver, Canada
- Transform-Retrieve-Generate: Natural Language-Centric Outside-Knowledge
CVPR 2022, New Orleans, USA
- RAVEN: A Dataset for Relational and Analogical Visual rEasoNing
MURI 2019, Edinburgh, UK
CVPR 2019, Long Beach, USA

AWARDS & SCHOLARSHIPS

- Doctoral Fellowship, UCLA 2020 – 2022
- Outstanding Reviewer, CVPR 2019
For reviewers contributed at least two reviews noted as excellent by area chairs
- Doctoral Student Travel Grants, UCLA 2017 – 2022
- First Class People's Scholarships, UESTC 2012 – 2014
For Top 5% students in their major
- Honor Award of Graduation, UESTC Jun 2015
For student who got top graduate school offers

PROFESSIONAL APPOINTMENTS & SERVICES

Conference Reviewer

- Reviewer, CVPR 2019-2021, 2023-2024
- Reviewer, ICLR 2022
- Reviewer, NeurIPS Dataset Track 2021
- Reviewer, NeurIPS 2020-2022
- Reviewer, ECCV 2020
- Reviewer, AAAI 2020, 2021
- Reviewer, ICCV 2019
- Reviewer, ICRA 2018

Conference Organization

- Student Organizer, MURI Annual Review Meeting, UCLA Aug 2017

Program Reviewer

- Reviewer, Fall 2018, 2019, 2020 UCLA Computer Science Master's Program, UCLA
- Reviewer, 2018 Cross-disciplinary Scholars in Science and Technology program (CSST), UCLA

Teaching Service

- Teaching Associate, Stats425, UCLA 2022 Winter
- Teaching Assistant, Stats20, Stats100B, Stats102C, UCLA 2020 Fall, 2021 Winter, 2021 Spring
- Reader, Statistics Department, UCLA 2017 Fall, 2021 Fall, 2022 Winter
- Teaching Assistant, C Programming, UESTC 2014 Fall

**PROFESSIONAL
SKILLS**

Programming Language

Python, C++, Matlab

Frameworks & Softwares

PyTorch, Tensorflow, ROS, Matlab