

RESEARCH INTERESTS	My research lies at the intersection of machine learning, data science and computer vision, with a focus on learning structure-aware representations from the real-world data. To that end, my goals are : 1) calibrate ML for real-world data issues towards robust performance; 2) learn hierarchical representations towards interpretable models ; 3) improve learning efficiency for ML deployment.		
EDUCATION	University of California, Berkeley	Aug. 2018 - May 2023	
	Ph.D. in Vision Science. Area : Computer Vision. Advisors : Stella X. Yu and Meng C. Lin . Thesis : Structure-Aware Representation Learning and Its Application to Healthcare Certificate in Teaching and Learning in Higher Education.		
	Xi'an Jiaotong University	Aug. 2014 - June 2018	
	Bachelor in Electrical Engineering. Visiting student at UC Berkeley from 2017 to 2018.		
RESEARCH EXPERIENCE	California Institute of Technology	Pasadena, CA	
	<i>Postdoctoral Researcher in Computing and Mathematical Sciences</i>	July 2023 - Present	
	Advisor : Anima Anandkumar Topics : AI for science, specifically representation learning for inverse problems and imaging with applications including ultrasound and photoacoustic imaging		
	University of California, Berkeley	Berkeley, CA	
	<i>Graduate Student Researcher</i>	Aug. 2018 - May 2023	
	Topics : Real-world representation learning (learning from imperfect data, 3D visual representations and efficient learning), as well as their applications to healthcare (AI for dry eye disease diagnosis)		
HONORS AND AWARDS	Best Paper Award, ML4H	2023	
	Vector Institute Fellowship (offered)	2023	
	Best Paper Award, HKSTP	2019	
	Best Paper Award, CVPR PBVS workshop	2019	
	Seagate Fellowship	2018	
	Outstanding Graduate Award, Xi'an Jiaotong University	2018	
	Top 10 Undergraduate Award, Xi'an Jiaotong University	2017	
	National Scholarship of China	2015 - 2017	
	Meritorious Winner, the International Mathematical Contest in Modeling (top 8%)	2016	
GRANTS (CO-AUTHORED)	NIH-R01, "Data-Driven Design of Structured Materials for Bio-Medical Applications"	2023	
	NIH-R21EY033881, "Towards a New Paradigm in Meibomian Gland Evaluation Using AI" (250k)	2022	
	BAIR Commons, "Scene Sketch to Photo Synthesis"	2021	
	Berkeley Deep Drive, "Learning Dynamic Point Set Neighbourhoods for 3D Object Detection"	2020	
PREPRINTS	[1] Trajectory Regularization Enhances Self-Supervised Geometric Representation Jiayun Wang* , Yubei Chen*, Stella X. Yu, Yann LeCunn [2] A Machine Learning Approach to Predicting Dry-Eye Related Signs, Symptoms and Diagnoses Tejasvi Kothpalli*, Jiayun Wang* , Andrew D.Graham, Stella X. Yu, Meng C. Lin		
JOURNAL ARTICLES	[1] Open Long-Tailed Recognition in a Dynamic World Ziwei Liu, Zhongqi Miao, Xiaohang Zhan, Jiayun Wang , Boqing Gong, Stella X. Yu <i>IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)</i> , 2022 [2] Predicting Demographics from Meibography Using Deep Learning Jiayun Wang , Andrew D. Graham, Stella X. Yu, Meng C. Lin <i>Nature - Scientific Reports</i> , 2022. [3] Spatial Transformer for 3D Point Clouds Jiayun Wang , Rudrasis Chakraborty, Stella X. Yu <i>IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)</i> , 2021 [4] Quantifying Meibomian Gland Morphology Using Artificial Intelligence Jiayun Wang , Shixuan Li, Thao N. Yeh, Rudrasis Chakraborty, Andrew D. Graham, Stella X. Yu, Meng C. Lin <i>Optometry and Vision Science</i> , 2021		

- [5] [A Deep Learning Approach for Meibomian Gland Atrophy Evaluation in Meibography Images](#)
Jiayun Wang, Thao N. Yeh, Rudrasis Chakraborty, Stella X. Yu, Meng C. Lin
Translational Vision Science and Technology (TVST), 2019
- [6] [Insights and Approaches Using Deep Learning to Classify Wildlife](#)
Zhongqi Miao, Kaitlyn M Gaynor, **Jiayun Wang**, Ziwei Liu, Oliver Muellerklein, Mohammad S Norouzzadeh, Alex McInturff, Rauri C K Bowie, Ran Nathon, Stella X. Yu, Wayne M. Getz
Nature - Scientific Reports, 2019.
- [7] [Deep Ranking Model by Large Adaptive Margin Learning for Person Re-identification](#)
Jiayun Wang, Sanping Zhou, Jinjun Wang, Qiqi Hou
Pattern Recognition (PR), 2018

CONFERENCE/
WORKSHOP
PAPERS

- [8] [Human Reposing and Virtual-Try-On from Multi-View Images](#)
Jiayun Wang, Amin Kheradmand, Himanshu Arora
Winter Conference on Applications of Computer Vision (WACV), 2024
- [9] [Deep Multimodal Fusion for Surgical Feedback Classification](#)
R. Kocielnik, E. Wong, T. Chu, L. Lin, **J. Wang**, D. Huang, A. Anandkumar, A. Hung
Machine Learning for Health. PMLR. Best Paper, 2023
- [10] [Recurrent Parameter Generators](#)
Jiayun Wang*, Yubei Chen*, Stella X. Yu, Brian Cheung, Yann LeCunn
Winter Conference on Applications of Computer Vision (WACV), 2023
- [11] [3D Shape Reconstruction from Free-Hand Sketches](#)
Jiayun Wang, Jierui Lin, Qian Yu, Runtao Liu, Yubei Chen, Stella X. Yu
European Conference on Computer Vision Workshop (ECCVW), 2022
- [12] [Unsupervised Scene Sketch to Photo Synthesis](#)
Jiayun Wang, Sangryul Jeon, Stella X. Yu, Xi Zhang, Himanshu Arora, Yu Lou
European Conference on Computer Vision Workshop (ECCVW), 2022
- [13] [Tracking the Dynamics of the Tear Film Lipid Layer](#)
T. Kothpalli, C. Shou, J. Ding, **J. Wang**, A.D. Graham, T. Svitova, S.X. Yu, M.C. Lin
Conference on Neural Information Processing Systems Workshop (NeurIPSW), 2022
- [14] [Orthogonal Convolutional Neural Networks](#)
Jiayun Wang, Yubei Chen, Rudrasis Chakraborty, Stella X. Yu
Conference on Computer Vision and Pattern Recognition (CVPR), 2020
- [15] [Large-scale Long-Tailed Recognition in an Open World](#)
Ziwei Liu, Zhongqi Miao, Xiaohang Zhan, **Jiayun Wang**, Boqing Gong, Stella X. Yu
Conference on Computer Vision and Pattern Recognition (CVPR) **Oral**, 2019
- [16] [Sur-Real: Frechet Mean and Distance Transform for Complex-Valued Deep Learning](#)
Rudrasis Chakraborty, **Jiayun Wang**, Stella X. Yu
Conference on Computer Vision and Pattern Recognition Workshop (CVPRW) **Best Paper**, 2019
- [17] [Point to Set Similarity Based Deep Feature Learning for Person Re-identification](#)
Sanping Zhou, Jinjun Wang, **Jiayun Wang**, Yihong Gong, Nanning Zheng
Conference on Computer Vision and Pattern Recognition (CVPR), 2017

PATENT

- [18] Image Generation Based on a Multi-Image Set and Pose Data
Amin Kheradmand, **Jiayun Wang**, Himanshu Arora
File number : P80654-US01 ; Date : March 20, 2023.

TEACHING

Guest Lecturer, Caltech Winter 2024
Machine Learning and Statistical Inference (CS165)

Graduate Student Instructor, UC Berkeley Fall 2018, 2019, 2020 and Spring 2023
Deep Neural Networks (CS182/282)
Designed course materials illustrating both fundamentals of deep neural networks (e.g. regularization, weights and gradients of CNNs at different layers) as well as advanced applications (e.g. to deep learning systems and biomedicine). 400 students are enrolled.

Machine Learning (CS189/289)
Gave guest lectures, designed real-world problem-focused homework and exams on EM algorithm, long-tailed distribution, research topics like medical imaging, etc., led discussion sessions, and help facilitate course projects. 400 students are enrolled in the class.

Visual Perception (VS205)

Led discussions and lab sessions to help around 70 students understand basic psychophysical and statistical methods in visual perception.

Volunteer teacher for elementary school students, [Bay Area Scientists in Schools](#) 2019 - 2022

INVITED TALKS

Towards Real-World Representation Learning and Its Applications to Healthcare

- Seminar at Stony Brook University May 2023
- Seminar at Northwestern University April 2023
- Seminar at Berkeley AI Research Lab April 2023
- Seminar at Vector Institute April 2023
- Seminar at California Institute of Technology Mar 2023
- Seminar at Duke University Jan 2023
- Seminar at Apple (Camera Incubation Team) Jan 2023
- Seminar at NVIDIA (Self-Driving Team) Jan 2023

Generate Photos and 3D from Sketches

- Bosch-ICSI Research Seminar Aug. 2022
- Seminar at Amazon (FitScience Team) June 2022

Redundancy and Compression in Deep Neural Networks

- Berkeley Oxyopia Seminar Nov. 2021
- Berkeley MRI Seminar Sep. 2021

Learning to Diagnose Dry Eye Diseases from Clinicians

- Seminar at Berkeley Vision Science Retreat Nov. 2019

MENTORSHIP

Arushi Gupta, undergraduate at Caltech. Active.

Alex Ho, Master at UIUC. Active.

Aditi Chandrashekar, undergraduate at Caltech. Active.

Martin Zhai, undergraduate at UC Berkeley. Next : Master at Cornell University.

Jasmine Li, undergraduate at University of Washington. Next : Master at University of Washington.

Tejasvi Kothpalli, undergraduate at UC Berkeley. Next : PhD at UC Berkeley.

Shixuan Wayne Li, undergraduate at UC Berkeley. Next : Master at Brown University.

SERVICE AND LEADERSHIP

Reviewer : CVPR, ICCV, ECCV, SIGGRAPH, NeurIPS, ICLR, ICML, AAAI, BMVC, WACV, ACCV, IEEE-TPAMI, IEEE-TIP, IEEE-JSTARS, IEEE-JBHI, IEEE-Access, ACM Comp Surv., ACM TOMM, PLOS One, OVS, TVST, Current Medical Imaging, Contact Lens and Anterior Eye

Editor, Frontiers in Computer Science 2023 - Present

Member, Caltech AI Graduate Admissions Committee 2024

Member, American Association for the Advancement of Science 2023 - Present

Member, Berkeley Diversity, Equity, Inclusion, and Belonging (DEIB) Committee 2022 - 2023

Mentor, Berkeley AI Research Mentoring Program 2022 - 2023

Program Committee Member, AAAI 2021

Program Committee Chair, Bay Area Vision Research Day (BAVRD) 2019

Vice President, Chinese Graduate and Postdoctoral Scholars Association at UC Berkeley 2019 - 2021

INDUSTRIAL EXPERIENCE

Azip Cupertino, CA

Founding Member, Research Scientist (part-time) Oct 2020 - Aug. 2023

- Participating in core projects towards robust, efficient and scalable real-world AI-IoT solutions
- Worked on full-stack machine learning and delivered robust models and products to customers
- Built the tiniest human detection system with robust performance under different lighting conditions

Amazon

Sunnyvale, CA

Applied Scientist Intern May 2022 - Nov. 2022

- Mentors : [Dr. Himanshu Arora](#) and [Dr. Amin Kheradmand](#)
- Developed multi-view human reposing and virtual try-on system that beats state-of-the-art methods
- The work has been submitted to CVPR, and as a patent application

Aibee*Research Intern*

Palo Alto, CA
May 2020 - Aug. 2020

- Mentors : [Dr. Song Cao](#) and [Prof. Silvio Savarese](#)
- Developed novel algorithms for fine-grained long-tailed vehicle recognition and improved minority class accuracy by 20%

Sensetime*Research Intern*

Shenzhen, China
Feb. 2018 - Aug. 2018

- Developed an RGBD-camera-based 3D portrait animation product, which was featured in Vivo's 2018 latest smartphone model
- Developed efficient classification algorithms for long-tailed fine-grained data and ranked 6th in [CVPR 2018 Fine-grained Visual Categorization Competition](#)
- Proposed novel deep networks for efficient point cloud detection and improved 4% performance

- REFERENCES
- [1] Anima Anandkumar, anima@caltech.edu
Bren Professor of Computing and Mathematical Sciences, California Institute of Technology
 - [2] Stella X. Yu, stellayu@umich.edu
Professor of Electrical Engineering and Computer Sciences, University of Michigan, Ann Arbor
Adjunct Professor of Electrical Engineering and Computer Sciences, UC Berkeley
 - [3] Meng C. Lin, mclin@berkeley.edu
Professor of Optometry and Vision Science, UC Berkeley
 - [4] Yubei Chen, ybchen@ucdavis.edu
Assistant Professor of Electrical and Computer Engineering, UC Davis
 - [5] Yuan Lu, yuan@aizip.ai
President of Aizip, Inc.