

CONTACT INFO	Affiliation: UCLA Center for Vision, Cognition, Learning and Autonomy (VCLA) Email: yixin.zhu@ucla.edu Homepage: www.yzhu.io	
RESEARCH INTERESTS	Computer Vision Functional Object and Scene Understanding Computer Graphics Physics-based Simulation Cognitive Science Intuitive Physics, Causal Reasoning Robotics Functional Manipulation Virtual Reality Physical Reasoning inside VR Environments	
EDUCATION	Ph.D. in Statistics, UCLA Advisor: Prof. Song-Chun Zhu. Funded by – DARPA XAI N66001-17-2-4029 <i>Learning and Communicating Explainable Representations for Analytics and Autonomy</i> – ONR MURI N00014-16-1-2007 <i>Understanding Scenes and Events through Joint Parsing, Cognitive Reasoning and Lifelong Learning</i> – DARPA SIMPLEX N66001-15-C-4035 <i>Learning Homogeneous Knowledge Representation from Heterogeneous Data for Quantitative and Qualitative Reasoning in Autonomy</i> – DARPA MSEE FA 8650-11-1-7149 <i>SEE on a Unified Foundation for Representation, Inference and Learning</i> – ONR MURI N00014-10-1-0933 <i>Knowledge Representation, Reasoning and Learning for Understanding Scenes and Events</i> – NSF IIS-1423305 <i>Inferring the “Dark Matter” and “Dark Energy” from Image and Video</i>	April 2018
	M.S. in Computer Science, UCLA	December 2013
	B.E. in Software Engineering, Xi’an Jiaotong University, China	July 2012
EXPERIENCES	Postdoctoral Scholar Advisor: Prof. Song-Chun Zhu Center for Vision, Cognition, Learning and Autonomy (VCLA), UCLA	April 2018 - present
	Research Director DMAI	January 2018 - present
	Research Scientist International Center for AI and Robot Autonomy (CARA) (NPO)	July 2018 - present
	Graduate Research Assistant Advisor: Prof. Song-Chun Zhu Center for Vision, Cognition, Learning and Autonomy (VCLA), UCLA	March 2013 - April 2018
	Visiting Student Host: Prof. Chenfanfu Jiang Computer Graphics Group, Penn	July 2017
	Research Intern Mentor: Prof. Gil Alterovitz Biomedical Cybernetics Laboratory, Harvard Medical School	Summer 2012
	UCLA-CSST Program Advisor: Prof. Todd Millstein Computer Science Department, UCLA	Summer 2011
AWARDS AND SCHOLARSHIPS	Outstanding Statistician Award, UCLA Statistics Department RAS Travel Grant, ICRA Outstanding Reviewer, CVPR Doctoral Student Travel Grants, UCLA Doctoral Student Travel Grants, UCLA Statistics Department	2018 2018 2017 2017 2017

Sponsorship for VisionMeetsCognition Workshop at CVPR, Intel Fellowship, University of California, Los Angeles	2017 2015 - 2018
CUDA Hardware Donation Program for Researchers, Nvidia	2014
Honor Graduate Certificate, Xi'an Jiaotong University, China	2012
Google Scholarship, Google	2011
UCLA-CSST Scholarship, University of California, Los Angeles	2011
Samsung Scholarship, Samsung	2010
Excellent Student Scholarship, Xi'an Jiaotong University, China	2008 - 2011

- REFEREED JOURNAL PAPERS
- [3] C. Jiang*, S. Qi*, **Y. Zhu***, S. Huang*, Jenny Lin, Lap-Fai Yu, D. Terzopoulos, and S.-C. Zhu. (* Joint first authors) *Configurable 3D Scene Synthesis and 2D Image Rendering with Per-Pixel Ground Truth using Stochastic Grammars*. International Journal of Computer Vision (IJCV) 126.9 (2018): 920-941.
- [2] Y. Hu, Y. Fang, Z. Ge, Z. Qu, **Y. Zhu**, A. Pradhana, and C. Jiang. *A Moving Least Squares Material Point Method with Displacement Discontinuity and Two-Way Rigid Body Coupling*. ACM Transactions on Graphics (TOG) (Proceedings of ACM SIGGRAPH) 37.4 (2018): 150-163.
- [1] T. Ye*, S. Qi*, J. Kubricht, **Y. Zhu**, H. Lu, and S.-C. Zhu. (* Joint first authors) *The Martian: Examining Human Physical Judgments Across Virtual Gravity Fields*. Invited Talk at IEEE VR 2017 and VRLA 2017. IEEE Transactions on Visualization and Computer Graphics (TVCG) 23.4 (2017): 1399-1408.
- REFEREED CONFERENCE PAPERS
- [18] S. Huang, S. Qi, Y. Xiao, **Y. Zhu**, Y. N. Wu, and S.-C. Zhu. *Cooperative Holistic 3D Scene Understanding from a Single RGB Image*. 32th Conference on Neural Information Processing Systems (NIPS), 2018
- [17] S. Huang, S. Qi, **Y. Zhu**, Y. Xiao, Y. Xu, and S.-C. Zhu. *3D Scene Parsing and Reconstruction from a Single RGB Image via Holistic Scene Grammar*. 15th European Conference on Computer Vision (ECCV), 2018
- [16] M. Edmonds*, J. Kubricht*, C. Summers, **Y. Zhu**, B. Rothrock, S.-C. Zhu, and H. Lu. (* Joint first authors) *Human Causal Transfer: Challenges for Deep Reinforcement Learning*. [Oral] 40th Annual Conference of the Cognitive Science Society (CogSci), 2018.
- [15] S. Qi, **Y. Zhu**, S. Huang, C. Jiang, and S.-C. Zhu. *Human-centric Indoor Scene Synthesis using Stochastic Grammar*. 31th Computer Vision and Pattern Recognition (CVPR), 2018.
- [14] H. Liu*, Y. Zhang*, W. Si, X. Xie, **Y. Zhu**, and S.-C. Zhu. (* Joint first authors) *Interactive Robot Knowledge Patching using Augmented Reality*. 35th International Conference on Robotics and Automation (ICRA), 2018.
- [13] X. Xie*, H. Liu*, M. Edmonds, F. Gao, S. Qi, **Y. Zhu**, B. Rothrock, and S.-C. Zhu. (* Joint first authors) *Unsupervised Learning of Hierarchical Models for Hand-Object Interactions using Tactile Glove*. 35th International Conference on Robotics and Automation (ICRA), 2018.
- [12] D. Wang*, J. Kubricht*, **Y. Zhu***, W. Liang, S.-C. Zhu, C. Jiang, and H. Lu. (* Joint first authors) *Spatially Perturbed Collision Sounds Attenuate Perceived Causality in 3D Launching Events*. [Oral] 25th IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR), 2018.
- [11] W. Liang, **Y. Zhu**, and S.-C. Zhu.

Tracking Occluded Objects and Recovering Incomplete Trajectories by Reasoning about Containment Relations and Human Actions. [Spotlight]

32th AAAI Conference on Artificial Intelligence (AAAI), 2018.

- [10] M. Edmonds*, F. Gao*, X. Xie, H. Liu, **Y. Zhu**, B. Rothrock, and S.-C. Zhu. (★ Joint first authors)
Feeling the Force: Integrating Force and Pose for Fluent Discovery through Imitation Learning to Open Medicine Bottles. [Oral]
30th International Conference on Intelligent Robots and Systems (IROS), 2017.
- [9] H. Liu*, X. Xie*, M. Millar*, M. Edmonds, F. Gao, **Y. Zhu**, V. J. Santos, B. Rothrock, and S.-C. Zhu. (★ Joint first authors)
A Glove-based System for Studying Hand-Object Manipulation via Pose and Force Sensing. [Oral]
30th International Conference on Intelligent Robots and Systems (IROS), 2017.
- [8] J. Kubricht*, **Y. Zhu***, C. Jiang*, D. Terzopoulos, S.-C. Zhu, and H. Lu. (★ Joint first authors)
Consistent Probabilistic Simulation Underlying Human Judgment in Substance Dynamics. [Oral]
39th Annual Conference of the Cognitive Science Society (CogSci), 2017.
- [7] J. Lin*, **Y. Zhu***, J. Kubricht*, S.-C. Zhu, and H. Lu. (★ Joint first authors)
Visuomotor Adaptation and Sensory Recalibration in Reversed Hand Movement Task.
39th Annual Conference of the Cognitive Science Society (CogSci), 2017.
- [6] J. Lin*, X. Guo*, J. Shao*, C. Jiang, **Y. Zhu**, and S.-C. Zhu. (★ Joint first authors)
A Virtual Reality Platform for Dynamic Human-Scene Interaction. [Oral]
ACM SIGGRAPH Asia 2016, Workshop on Virtual Reality meets Physical Reality
- [5] W. Liang, Y. Zhao, **Y. Zhu**, and S.-C. Zhu.
What is Where: Inferring Containment Relations from Videos. [Oral]
25th International Joint Conference on Artificial Intelligence (IJCAI), 2016.
- [4] J. Kubricht*, C. Jiang*, **Y. Zhu***, S.-C. Zhu, D. Terzopoulos, and H. Lu. (★ Joint first authors)
Probabilistic Simulation Predicts Human Performance on Viscous Fluid-Pouring Problem. [Oral]
38th Annual Conference of the Cognitive Science Society (CogSci), 2016.
- [3] **Y. Zhu***, C. Jiang*, Y. Zhao, D. Terzopoulos, and S.-C. Zhu. (★ Joint first authors)
Inferring Forces and Learning Human Utilities From Videos. [Oral]
29th Computer Vision and Pattern Recognition (CVPR), 2016.
- [2] W. Liang, Y. Zhao, **Y. Zhu**, and S.-C. Zhu.
Evaluating Human Cognition of Containing Relations with Physical Simulation. [Oral]
37th Annual Conference of the Cognitive Science Society (CogSci), 2015.
- [1] **Y. Zhu***, Y. Zhao*, and S.-C. Zhu. (★ Joint first authors)
Understanding Tools: Task-Oriented Object Modeling, Learning and Recognition.
28th Computer Vision and Pattern Recognition (CVPR), 2015.

TECHNICAL
REPORTS

J. Jeon, K. Micinski, J. Vaughan, N. Reddy, **Y. Zhu**, J. Foster, and T. Millstein.
Dr. Android and Mr. Hide: Fine-grained security policies on unmodified Android.
Technical Reports of the Computer Science Department, University of Maryland, 2015

PROFESSIONAL
SERVICES

Conference Organization

Webmaster, Computer Vision and Pattern Recognition (CVPR) 2019

Co-chair, Computer Vision and Pattern Recognition (CVPR) 2018 Workshop on
Vision meets Cognition: Functionality, Physics, Intentionality and Causality

Co-chair, Computer Vision and Pattern Recognition (CVPR) 2017 Workshop on Vision meets Cognition: Functionality, Physics, Intentionality and Causality

Co-chair, SIGGRAPH Asia 2016 Workshop on Virtual Reality meets Physical Reality: Modelling and Simulating Virtual Humans and Environments

Co-chair, CogSci 2016 Workshop on Physical and Social Scene Understanding

Student Organizer, MURI Annual Review Meeting, UCLA, 2017.

Student Organizer, MURI Annual Review Meeting, Lake Arrowhead, 2015.

Peer-reviewed Journals and Conferences

Computer Vision:

Reviewer, International Journal of Computer Vision (IJCV)

Reviewer, Computer Vision and Pattern Recognition (CVPR), 2015-2019

Reviewer, International Conference on Computer Vision (ICCV), 2015-2017

Reviewer, European Conference on Computer Vision (ECCV), 2018

Reviewer, British Machine Vision Conference (BMVC), 2017-2018

Cognitive Science:

Reviewer, Annual Conference of the Cognitive Science Society (CogSci), 2015-2018

Human-Computer Interaction:

Reviewer, IEEE Virtual Reality and 3D User Interfaces (IEEE VR), 2018-2019

Reviewer, ACM User Interface Software and Technology Symposium (UIST), 2018

Reviewer, ACM Tangible, Embedded, and Embodied Interactions (TEI), 2019

Department and University Services

Faculty Leader, Peer Seminars in Math/Stat, UCLA-CSST, 2016

Student Reviewer, UCLA Computer Science Graduate Admission, 2015-2018

Student Reviewer, UCLA-CSST Program Admission, 2016-2018

PhD Student Ambassadors, UCLA Computer Science Department, 2016-2018

INVITED TALKS

Visual Commonsense Reasoning
at PKU-UCLA JRI Annual Symposium October 2018

Object and Scene Understanding: From Passive Observation to Active Interaction
at ONR MURI Annual Review Meeting September 2018

Visual Commonsense Reasoning
at CVPR Workshop on Visual Understanding of Humans in Crowd Scene June 2018

Guest Lecture: Tools and Functionality
at UCLA Statistics 232C: Cognitive Artificial Intelligence May 2018

Guest Lecture: How to Build a Cognitive Robot
at UCLA Communication Study 155: Artificial Intelligence and New Media May 2017

To Feel and Dream: Data for Intelligent Machine Beyond Images and Texts
at Teddy Talk in plenary session at CRESSTCON 2016 September 2016

Understanding Functionality and Affordance of Objects and Scenes

- at* Beijing Institute of Technology May 2016
- Functionality and Affordance of Objects and Scenes
at Princeton Vision Group February 2016
- Understanding Objects as Tools, Containers and Chairs
at UCLA Computational Vision and Learning Lab and UCLA Human Perception Lab
November 2015
- Learning from Human Demonstration: Understanding Objects as Tools
at ONR MURI Annual Review Meeting September 2015
- Understanding Tool Use: a Task-oriented Vision Problem
at ONR MURI Annual Review Meeting December 2014
- What is a Tool? Going beyond what is where
at DARPA MSEE Annual Review Meeting September 2014
- IN THE PRESS
- Our work on Scene Understanding was featured in
UCLA Statistics Moments. June 2016
- UCLA Daily Bruin Prime issued a special interview on our work.
Title: "Give a Robot a Flesh" May 2016
- Our work on "Understanding Tools" was featured in
Statistics Department News. June 2015
- COLLABORATORS
- Prof. Chenfanfu Jiang
at Computer Graphics Group, UPenn
 - Prof. Demetri Terzopoulos
at Computer Graphics & Vision Laboratory, UCLA
 - Dr. Brandon Rothrock
at Jet Propulsion Laboratory, Caltech
 - James Kubricht and Prof. Hongjing Lu
at Computational Vision and Learning Lab, UCLA
 - Prof. Ying Nian Wu
at Department of Statistics, UCLA
 - Prof. Tao Gao
at Department of Statistics and Communication Studies, UCLA
 - Prof. Wei Liang
at Media Computing and Intelligent Systems Lab, Beijing Institute of Technology
 - Dr. Yibiao Zhao
at iSee.ai
 - Prof. Elias Bareinboim
at Department of Computer Science and Statistics, Purdue University
 - Prof. Lap-Fai (Craig) Yu
at Graphics and Virtual Environments Lab, UMass Boston

- Jiajun Wu
at CASIL, MIT
- Prof. Tianfu Wu
at NC State University (NCSU)
- Dr. Sara Spotorno, Dr. Tian Xu and Prof. Philippe Schyns
at Centre for Cognitive Neuroimaging, University of Glasgow
- Eric Peltola and Prof. Veronica Santos
at Biomechatronics Lab, UCLA
- Michael Walton and Andrew Fuchs
at SPAWAR, San Diego

STUDENTS
MENTORED

- Shu Wang, PhD in Statistics, UCLA, 2018 Fall
- Wenwen Si, Master in Computer Vision, CMU, 2018 Fall
- Hangxin Liu, PhD in Computer Science, UCLA, 2018 Spring
- Jenny Lin, PhD in Computer Science, CMU, 2017 Fall
- Mark Edmonds, PhD in Computer Science, UCLA, 2017 Fall
- Tian Ye, Master in Robotics, CMU, 2017 Fall
- Feng Gao, Master in Statistics, UCLA, 2017 Fall
- Xu Xie, Master in Statistics, UCLA, 2017 Fall
- Xingwen Guo, Master in Computer Science, Yale, 2017 Fall
- Chi Zhang, Master in Computer Science, UCLA, 2017 Fall
- Jingyu Shao, Master in Statistics, UCLA, 2016 Winter
- Yutong Zhang, Master in Computer Science, UCLA, 2015 Fall