

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 Mental Simulation of Object and Substance Dynamics Robotics Functional Manipulation Virtual Reality Physical Reasoning inside VR Environments	
EDUCATION	Ph.D. Candidate in Statistics, UCLA June 2015 Advisor: Prof. Song-Chun Zhu Currently 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> Previously Funded by – 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>	
	M.S. in Computer Science, UCLA December 2013	
	B.E. in Software Engineering, Xi’an Jiaotong University, China July 2012	
EXPERIENCES	Graduate Research Assistant March 2013 - present Advisor: Prof. Song-Chun Zhu Center for Vision, Cognition, Learning and Autonomy (VCLA), UCLA Research Director January 2018 - present DMAI Visiting Student July 2017 Host: Prof. Chenfanfu Jiang Computer Graphics Group, Penn Research Intern Summer 2012 Mentor: Prof. Gil Alterovitz Biomedical Cybernetics Laboratory, Harvard Medical School UCLA-CSST Program Summer 2011 Advisor: Prof. Todd Millstein Computer Science Department, UCLA	
AWARDS AND SCHOLARSHIPS	Outstanding Reviewer, CVPR 2017 Doctoral Student Travel Grants, UCLA 2017 Doctoral Student Travel Grants, UCLA Statistics Department 2017 Sponsorship for VisionMeetsCognition Workshop at CVPR, Intel 2017 Fellowship, University of California, Los Angeles 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 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.
IEEE Transactions on Visualization and Computer Graphics (TVCG) 23.4 (2017): 1399-1408.
- REFEREED CONFERENCE PAPERS S. Qi, **Y. Zhu**, S. Huang, C. Jiang, and S.-C. Zhu.
Human-centric Indoor Scene Synthesis using Stochastic Grammar.
Poster Presentation.
31th Computer Vision and Pattern Recognition (CVPR), 2018.
- 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.
- 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.
- 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 Presentation.
25th IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR), 2018.
- W. Liang, **Y. Zhu**, and S.-C. Zhu.
Tracking Occluded Objects and Recovering Incomplete Trajectories by Reasoning about Containment Relations and Human Actions.
Spotlight Presentation.
32th AAAI Conference on Artificial Intelligence (AAAI), 2018.
- M. Edmonds*, F. Gao*, X. Xie, H. Liu, **Y. Zhu**, B. Rothrock, and S.-C. Zhu. (* Joint first authors)
Learning Complex Functional Manipulations by Human Demonstration and Fluent Discovery.
Oral Presentation.
30th International Conference on Intelligent Robots and Systems (IROS), 2017.
- 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 Presentation.
30th International Conference on Intelligent Robots and Systems (IROS), 2017.
- 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 Presentation.
39th Annual Conference of the Cognitive Science Society (CogSci), 2017.
- 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.
Poster Presentation.
39th Annual Conference of the Cognitive Science Society (CogSci), 2017.
- 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 Presentation.
ACM SIGGRAPH Asia 2016, Workshop on Virtual Reality meets Physical Reality
- W. Liang, Y. Zhao, **Y. Zhu**, and S.-C. Zhu.

What is Where: Inferring Containment Relations from Videos.
Oral Presentation.
25th International Joint Conference on Artificial Intelligence (IJCAI), 2016.

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 Presentation.
38th Annual Conference of the Cognitive Science Society (CogSci), 2016.

Y. Zhu*, C. Jiang*, Y. Zhao, D. Terzopoulos, and S.-C. Zhu. (* Joint first authors)
Inferring Forces and Learning Human Utilities From Videos.
Oral Presentation.
29th Computer Vision and Pattern Recognition (CVPR), 2016.

W. Liang, Y. Zhao, **Y. Zhu**, and S.-C. Zhu.
Evaluating Human Cognition of Containing Relations with Physical Simulation.
Oral Presentation.
37th Annual Conference of the Cognitive Science Society (CogSci), 2015.

Y. Zhu*, Y. Zhao*, and S.-C. Zhu. (* Joint first authors)
Understanding Tools: Task-Oriented Object Modeling, Learning and Recognition.
Poster Presentation.
28th Computer Vision and Pattern Recognition (CVPR), 2015.

PAPERS IN
REVIEW

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.
Under review in IJCV

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.
Under review in SIGGRAPH 2018

S. Huang, S. Qi, **Y. Zhu**, and S.-C. Zhu.
Holistic 3D Indoor Scene Parsing and Reconstruction from a Single RGB Image.
Under review in ECCV 2018

X. Xie*, S. Wang*, J. Lin*, H. Liu, S. Qi, **Y. Zhu**, and S.-C. Zhu. (* Joint first authors)
VRGym: Task-rich Virtual Reality Testbed for Autonomous Agents.
Under review in IJCAI 2018

Y. Zhu, S.-C. Zhu, and C. Jiang.
Learning Intangible Affordance from Videos by Inferring Temperature and Velocity Field in 3D Indoor Scenes.
Under review in IJCAI 2018

H. Liu, C. Zhang, **Y. Zhu**, C. Jiang and S.-C. Zhu.
Mirroring Human Manipulation Actions to Robots with Functional Equivalence.
Under review in IJCAI 2018

M. Edmonds*, J. Kubricht*, C. Summers, **Y. Zhu**,
B. Rothrock, S.-C. Zhu, and H. Lu. (* Joint first authors)
Deep Reinforcement Learning Fails to Account for Human Causal Transfer.
Under review in CogSci 2018

H. Liu*, Z. Zhang*, X. Xie, W. Si, **Y. Zhu**, and S.-C. Zhu. (* Joint first authors)
VR Glove for High-Fidelity Virtual Grasp.
Under review in IROS 2018

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

Reviewer, Computer Vision and Pattern Recognition (CVPR), 2015-2018

Reviewer, International Journal of Computer Vision (IJCV), 2015-2016

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

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

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

Reviewer, British Machine Vision Conference (BMVC), 2017

Reviewer, IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR), 2018

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 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

- 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