

CONTACT INFO	Affiliation: UCLA Center for <a href="#">Vision, Cognition, Learning and Autonomy (VCLA)</a> Email: <a href="mailto:yixin.zhu@ucla.edu">yixin.zhu@ucla.edu</a> Homepage: <a href="http://www.yzhu.io">www.yzhu.io</a>	
RESEARCH INTERESTS	<b>Computer Vision</b> Functional Object and Scene Understanding <b>Computer Graphics</b> Physics-based Simulation <b>Cognitive Science</b> Computational Models of Perception and Action <b>Robotics</b> Functional Equivalent Manipulation <b>Virtual Reality</b> Extraordinary Environments and Abnormal Objects	
EDUCATION	Ph.D. Candidate in Statistics, UCLA      June 2015 3rd year Ph.D. student Advisor: Prof. Song-Chun Zhu Currently Funded by <ul style="list-style-type: none"> <li>- DARPA XAI N66001-17-2-4029 <i>Learning and Communicating Explainable Representations for Analytics and Autonomy</i></li> <li>- DARPA SIMPLEX N66001-15-C-4035 <i>Learning Homogeneous Knowledge Representation from Heterogeneous Data for Quantitative and Qualitative Reasoning in Autonomy</i></li> <li>- DARPA FUNLOL <i>Fundamental Limit of Learning Concepts and Models for Complex Systems</i></li> <li>- ONR MURI N00014-16-1-2007 <i>Understanding Scenes and Events through Joint Parsing, Cognitive Reasoning and Lifelong Learning</i></li> </ul> Previously Funded by <ul style="list-style-type: none"> <li>- DARPA MSEE FA 8650-11-1-7149 <i>SEE on a Unified Foundation for Representation, Inference and Learning</i></li> <li>- ONR MURI N00014-10-1-0933 <i>Knowledge Representation, Reasoning and Learning for Understanding Scenes and Events</i></li> <li>- NSF IIS-1423305 <i>Inferring the "Dark Matter" and "Dark Energy" from Image and Video</i></li> </ul> 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 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 Mentor: 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 - 2017 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	

- PEER-REVIEWED 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.
- PEER-REVIEWED CONFERENCE PAPERS W. Liang, **Y. Zhu**, and S.-C. Zhu.  
Tracking Occluded Objects and Recovering Incomplete Trajectories by Reasoning about Containment Relations and Human Actions.  
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

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.  
Under review in IEEE VR 2018

S. Qi, **Y. Zhu**, S. Huang, and S.-C. Zhu.  
Human-centric Indoor Scene Synthesis using Stochastic Grammar.  
Under review in CVPR 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 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.  
Under review in ICRA 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 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.  
Under review in ICRA 2018

**Y. Zhu**, S.-C. Zhu, and C. Jiang.  
Learning Intangible Affordance from Videos by Inferring Temperature and Velocity Field in 3D Indoor Scenes.  
In preparation for IJCAI 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**

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, International Journal of Computer Vision (IJCV), 2015-2016  
Reviewer, Computer Vision and Pattern Recognition (CVPR), 2015-2018  
Reviewer, International Conference on Computer Vision (ICCV), 2015,2017  
Reviewer, British Machine Vision Conference (BMVC), 2017  
Reviewer, Annual Conference of the Cognitive Science Society (CogSci), 2015-2017  
Reviewer, IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR), 2017

### Department and University Services

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

INVITED TALKS	Guest Lecture: How to Build a Cognitive Robot <i>at</i> UCLA Communication Study 155: Artificial Intelligence and New Media	May 2017
	To Feel and Dream: Data for Intelligent Machine Beyond Images and Texts <i>at</i> Teddy Talk in plenary session at CRESSTCON 2016	September 2016
	Understanding Functionality and Affordance of Objects and Scenes <i>at</i> Beijing Institute of Technology	May 2016
	Functionality and Affordance of Objects and Scenes <i>at</i> Princeton Vision Group	February 2016
	Understanding Objects as Tools, Containers and Chairs <i>at</i> UCLA Computational Vision and Learning Lab and UCLA Human Perception Lab	November 2015
	Learning from Human Demonstration: Understanding Objects as Tools <i>at</i> ONR MURI Annual Review Meeting	September 2015
	Understanding Tool Use: a Task-oriented Vision Problem <i>at</i> ONR MURI Annual Review Meeting	December 2014
	What is a Tool? Going beyond what is where <i>at</i> 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 <i>at</i> Computer Graphics Group, UPenn	
	– Prof. Demetri Terzopoulos <i>at</i> Computer Graphics & Vision Laboratory, UCLA	
	– Dr. Brandon Rothrock <i>at</i> 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*
- 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*
- Dr. Jianxiong Xiao  
*at AutoX Inc.*
- Prof. Vahid Tarokh  
*at Department of Computer Science, Harvard University*

STUDENTS  
MENTORED

- Jenny Lin, PhD in Computer Science, CMU, 2017 Fall
- Tian Ye, Master in Robotics, CMU, 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