Shuran Song | Curriculum Vitae

Department of Computer Science – Columbia University – New York, NY 10027

https://shurans.github.io

Education

Princeton University
Ph.D. in Computer Science — 2018

Princeton University
MA in Computer Science — 2015

Hong Kong University of Science and Technology
B.Eng. in Computer Engineering — 2013

Appointments

Columbia University
Assistant Professor — 2019

Princeton University
Research Assistant — 2013-2018

Google Brain Robotics
Visiting Researcher — 2017-2018

Microsoft Research
Research Intern — 2014

Awards and Honors

Paper Awards

2019 RSS: **Best System Paper**, TossingBot: Learning to Throw Arbitrary Objects with Residual Physics

2019 CVPR: **Best Paper Finallist**, Neural Illumination: Lighting Prediction for Indoor Environments

2018 IROS: **Best Cognitive Robotics Paper Award Finalist**, Learning Synergies between Pushing and Grasping with Self-supervised Deep Reinforcement

2018 Amazon: **Best Systems Paper Award in Manipulation**, Robotic Pick-And-Place of Novel Objects in Clutter with Multi-Affordance Grasping and Cross-Domain Image Matching

Other Awards

2017: Wallace Fellowship – the highest award in the School of Engineering and Applied Science at Princeton, awarded annually to the top 4 graduate students.

2017: School of Engineering and Applied Science Award for Excellence

2017: 1st Place Winners (Stow Task) at the worldwide Amazon Robotics Challenge 2017

2016: Siebel Scholar, Class of 2017 – awarded annually for academic excellence and demonstrated leadership to over 90 top students from the world's leading graduate schools

2016: 3rd and 4th Place Winners at at the worldwide Amazon Picking Challenge 2016

2016: Qualcomm Innovation Fellowship Finalists

2015: Facebook Ph.D. Fellowship

2015: Princeton Innovation's 25 Under 25

2013: Princeton Ph.D. Student Fellowship

2013: HKUST Academic Achievement Medal

2012: Shanda Scholarship

2009 – 2012: Electronic & Computer Engineering Department Scholarship

2009 – 2012: HKUST Dean's List (all semesters)

Publications

Andy Zeng, **Shuran Song**, Stefan Welker, Johnny Lee, Alberto Rodriguez, Thomas Funkhouser
TossingBot: Learning to Throw Arbitrary Objects with Residual Physics
Robotics: Science and Systems (**RSS**), 2019
Best System Paper   ⓘ Project Webpage

Zhenjia Xu, Jiajun Wu, Andy Zeng, Joshua Tenenbaum, **Shuran Song**
DensePhysNet: Learning Dense Physical Object Representations via Multi-step Dynamic Interactions Robotics: Science and Systems (**RSS**), 2019   ⓘ Project Webpage

He Wang, Srinath Sridhar, Jingwei Huang, Julien Valentin, **Shuran Song** , Leonidas J. Guibas
Normalized Object Coordinate Space for Category-Level 6D Object Pose and Size Estimation
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**) 2019
Oral presentation   ⓘ Project Webpage

Shuran Song, and Thomas Funkhouser.
Neural Illumination: Lighting Prediction for Indoor Environments
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**) 2019
Best Paper Finalist, Oral presentation   ⓘ Project Webpage

2018: Michelle Guo, Edward Chou, **Shuran Song**, De-An Huang, Serena Yeung, Li Fei-Fei
Neural Graph Matching Networks for Fewshot 3D Action Recognition
European Conference on Computer Vision (**ECCV**), 2018

A. Zeng, **S. Song** S. Welker, J. Lee, A. Rodriguez, T. Funkhouser
Learning Synergies between Pushing and Grasping with Self-supervised Deep Reinforcement Learning International
Conference on Intelligent Robots and Systems(**IROS**), 2018
Best Cognitive Robotics Paper Award Finalist   ⓘ Project Webpage

Shuran Song, Andy Zeng, Angel X. Chang, Manolis Savva, Silvio Savarese, Thomas Funkhouser.
Im2Pano3D: Extrapolating 360 Structure and Semantics Beyond the Field of View.
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2018.
Oral presentation   ⓘ Project Webpage

Andy Zeng, **Shuran Song**, Kuan-Ting Yu, Elliott Donlon, Francois R. Hogan, Maria Bauza, Daolin Ma, Orion Taylor, Melody Liu, Eudald Romo, Nima Fazeli, Ferran Alet, Nikhil Chavan Dafle, Rachel Holladay, Isabella Morona, Prem Qu Nair, Druck Green, Ian Taylor, Weber Liu, Thomas Funkhouser, Alberto Rodriguez
Robotic Pick-and-Place of Novel Objects in Clutter with Multi-Affordance Grasping and Cross-Domain Image Matching.
International Conference on Robotics and Automation (**ICRA**), 2018.   ⓘ Project Webpage

2017: **Shuran Song**, Fisher Yu, Andy Zeng, Angel X. Chang, Manolis Savva, Thomas Funkhouser.
Semantic Scene Completion from a Single Depth Image.
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2017.
Oral presentation   ⓘ Project Webpage

Andy Zeng, **Shuran Song**, Matthias Niessner, Matthew Fisher, Jianxiong Xiao, Thomas Funkhouser
3DMatch: Learning Local Geometric Descriptors from RGB-D Reconstructions.
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2017.
Oral presentation   ⓘ Project Webpage

Yinda Zhang*, **Shuran Song***, Ersin Yumer, Manolis Savva, Joon-Young Lee, Hailin Jin, Thomas Funkhouser
Physically-Based Rendering for Indoor Scene Understanding Using Convolutional Neural Networks. IEEE Conference
on Computer Vision and Pattern Recognition (**CVPR**), 2017.
* indicates equal contribution.   ⓘ Project Webpage

Andy Zeng, Kuan-Ting Yu, **Shuran Song**, Daniel Suo, Ed Walker Jr., Alberto Rodriguez and Jianxiong Xiao
Multi-view Self-supervised Deep Learning for 6D Pose Estimation in the Amazon Picking Challenge
International Conference on Robotics and Automation (**ICRA**), 2017.   ⓘ Project Webpage

Angel X. Chang, Angela Dai, Thomas Funkhouser, Maciej Halber, Matthias Niessner, Manolis Savva, **Shuran Song** , Andy Zeng, Yinda Zhang
Matterport3D: Learning from RGB-D Data in Indoor Environments.
IEEE International Conference on 3D Vision (3DV) (**3DV**), 2017. ⓘ Project Webpage

2016: **Shuran Song**, Jianxiong Xiao.
Deep Sliding Shapes for Amodal 3D Object Detection in RGB-D Images.
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2016.
Spotlight presentation ⓘ Project Webpage

2015: **Shuran Song**, Samuel P. Lichtenberg, Jianxiong Xiao.
SUN RGB-D: A RGB-D Scene Understanding Benchmark Suite.
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2015.
Oral presentation ⓘ Project Webpage

Zhirong Wu, **Shuran Song**, Aditya Khosla, Fisher Yu, Linguang Zhang, Xiaoou Tang, Jianxiong Xiao.
3D ShapeNets: A Deep Representation for Volumetric Shapes.
IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2015.
Oral presentation ⓘ Project Webpage

2014: **Shuran Song**, Jianxiong Xiao.
Sliding Shapes for 3D Object Detection in Depth Images.
Proceedings of the 13th European Conference on Computer Vision (**ECCV**), 2014.
Oral presentation ⓘ Project Webpage

Yinda Zhang, **Shuran Song**, Ping Tan, Jianxiong Xiao.
PanoContext: A Whole-room 3D Context Model for Panoramic Scene Understanding.
Proceedings of the 13th European Conference on Computer Vision (**ECCV**), 2014.
Oral presentation ⓘ Project Webpage

2013: **Shuran Song**, Jianxiong Xiao.
Tracking Revisited using RGBD Camera: Unified Benchmark and Baselines.
Proceedings of 14th IEEE International Conference on Computer Vision (**ICCV**), 2013.
ⓘ Project Webpage

Manuscripts

Angel X. Chang, Thomas Funkhouser, Leonidas Guibas, Pat Hanrahan, Qixing Huang, Zimo Li.Silvio Savarese, Manolis Savva, **Shuran Song**, Hao Su, Jianxiong Xiao, Li Yi, Fisher Yu
ShapeNet: An Information-Rich 3D Model Repository.
arXiv:1512.03012 [cs.CV] ⓘ Project Webpage

Fisher Yu, Yinda Zhang, **Shuran Song**, Ari Seff, Jianxiong Xiao.
Construction of a Large-scale Image Dataset using Deep Learning with Humans in the Loop.
arXiv:1506.03365 [cs.CV] ⓘ Project Webpage

Shuran Song, Linguang Zhang, Jianxiong Xiao.
Robot In a Room: Toward Perfect Object Recognition in Closed Environments.
arXiv:1507.02703 [cs.CV] ⓘ Project Webpage

Academic Service

Area Chair, CVPR 2020

Program Committee, Siggraph Asia 2020

Organizer, CVPR Tutorial: 3D Deep Learning with Marvin 2016

Organizer, Large-scale Scene Understanding Challenge Workshop (**LSUN**) 2015-2016.

Committee, Scene Understanding Workshop (**SUNw**) 2014.

Reviewer: RSS, IROS, PAMI, IJCV, Siggraph, Siggraph Asia, ECCV, ICCV, CVPR, ICRA, 3DV, CVIU, IVC, Multimedia, Neurocomputing

Invited Talks

June 2019: 3D Scene Understanding with Deep Generative Model *CVPR 2019, 3DWidget Workshop*
June 2019: Neural Illumination: Lighting Prediction for Indoor Environments *CVPR 2019*
June 2018: Im2Pano3D: Extrapolating 360 Structure and Semantics Beyond the Field of View, *CVPR 2018*
Feb-Apirl 2018: Seeing the Unseen: Data-Driven 3D Scene Understanding for Robot Vision
University of Michigan Ann Arbor, EECS
Rice University, CS
Northestern University, CS
University of Illinois Urbana-Champaign, ECE CS
Georgia Institute of Technology, Interactive Computing
University of Texas, Austin, CS
Columbia University, EE CS
Dartmouth College, CS
Duke University, ECE CS
Yale University, CS
Brown University, CS
Simon Fraser University, CS
University of California, Los Angeles, CS
University of Wisconsin-Madison, CS
University of California, Santa Barbara, CS
Cornell University, ECE
Massachusetts Institute of Technology, CSAIL
Nov 2017: 3D Amodal Scene Understanding for Robotics, *Google X, Google Brain Research, MTV*
Oct 2017: A Big-3D-Data Approach to Visual Scene Understanding, *Facebook Research, Menlo Park*
July 2017: Semantic Scene Completion from a Single Depth Image, *CVPR* ⓘ Video
Aug 2016: Lessons Learned from the Amazon Robotics Challenge, *Princeton University*
July 2016: 3D Deep Learning for Amodal 3D Object Detection *CVPR Tutorial on 3D Deep Learning*
July 2016: Deep Sliding Shapes for Amodal 3D Object Detection in RGB-D Images. *CVPR* ⓘ Video
April 2016: Self-Supervised Deep Learning for Object Pose Estimation, *Princeton University*
Aug 2015: Towards Perfect Object Recognition in Closed and Structured Environments, *Microsoft Research, Redmond*
Aug 2015: 3D Scene Understanding with Large-Scale Synthetic Scene Datasets, *Stanford University*
June 2015: SUN RGB-D: A RGB-D Scene Understanding Benchmark Suite, *CVPR* ⓘ Video
March 2015: Teaching Computers to See the Way We Do, *Princeton 25 under 25*
Sep 2014: Sliding Shapes for 3D Object Detection in Depth Images, *ECCV* ⓘ Video
Aug 2014: A Big-3D-Data Approach to Visual Scene Understanding
Microsoft Research Asia, Tsinghua University, National Laboratory of Pattern Recognition, and Chinese Academy of Sciences

Teaching

Princeton COS429: Computer Vision – Teaching Assistant and Guest Lecturer
Princeton COS126: General Computer Science – Teaching Assistant
HKUST ELEC125: Introduction to Electro-Robot Design – Teaching Assistant
HKUST ELEC121: A System View of Communications: from Signals to Packets – Teaching Assistant