

# Andy Zeng

[github.com/andyzeng](https://github.com/andyzeng) • [andyz@cs.princeton.edu](mailto:andyz@cs.princeton.edu)

## Education

Princeton University • **PhD Computer Science** / 2017 - 2019 (Expected)

Advisor: Thomas Funkhouser

Research Areas: Computer Vision, Robotics, Machine Learning

Project Links: [cs.princeton.edu/~andyz](https://cs.princeton.edu/~andyz)

Princeton University • **MA Computer Science** / 2015 - 2017

University of California, Berkeley • **BA Computer Science and Math**

Double Major / 2011 - 2015

## Experience

Google Brain Robotics • Student Researcher / 2017 - Present

Princeton Vision and Robotics Group • with Thomas Funkhouser / 2015 - Present

MIT Manipulation and Mechanisms Lab • with Alberto Rodriguez / 2016 - 2017

Stanford Computer Graphics Lab • with Matthias Nießner / Summer 2015

CMU Computer Vision Group • Robotics Institute Summer Scholar / Summer 2014

Berkeley Tele-immersion Lab • with Ruzena Bajcsy / 2013 - 2015

Lenovo • Software Engineering Intern / Summer 2009

## Honors

Princeton SEAS Award for Excellence / 2018

Description: "Given to SEAS advanced graduate students who have performed at the highest level as scholars and researchers"

Best Cognitive Robotics Paper Award Finalist, IROS / 2018

Title: "Learning Synergies between Pushing and Grasping with Self-supervised Deep Reinforcement Learning"

Best Systems Paper Award, Amazon Robotics / 2018

Title: "Robotic Pick-and-Place of Novel Objects in Clutter with Multi-Affordance Grasping and Cross-Domain Image Matching"

NVIDIA Graduate Fellowship / 2018 - 2019

1st Place Winners (Stow Task) of the Worldwide Amazon Robotics Challenge / 2017

3rd Place Winners of the Worldwide Amazon Picking Challenge / 2016

Gordon Y.S. Wu Fellowship in Engineering and Wu Prize / 2015 - 2016

Description: "A highly selective and prestigious award" from Princeton

1st Place State (CA) Champion for FBLA Computer Programming / 2011

## Preprints

TossingBot: Learning to Throw Arbitrary Objects with Residual Physics

**Andy Zeng**, Shuran Song, Johnny Lee, Alberto Rodriguez, Thomas Funkhouser.

## Publications

Learning Synergies between Pushing and Grasping with Self-supervised Deep Reinforcement Learning

**Andy Zeng**, Shuran Song, Stefan Welker, Johnny Lee, Alberto Rodriguez, Thomas Funkhouser. *IEEE International Conference on Intelligent Robots and Systems (IROS) 2018*.  
[Best Cognitive Robotics Paper Award Finalist, IROS](#)

Robotic Pick-and-Place of Novel Objects in Clutter with Multi-Affordance Grasping and Cross-Domain Image Matching

**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. *IEEE International Conference on Robotics and Automation (ICRA) 2018*.

[Best Systems Paper Award, Amazon Robotics](#)

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

[Oral Presentation](#)

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

[Oral Presentation](#)

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

[Oral Presentation](#)

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

**Multi-view Self-supervised Deep Learning for 6D Pose Estimation in the Amazon Picking Challenge**

**Andy Zeng**, Kuan-Ting Yu, Shuran Song, Daniel Suo, Ed Walker Jr., Alberto Rodriguez, Jianxiong Xiao. *IEEE International Conference on Robotics and Automation (ICRA) 2017*.

## Invited Talks

**3D Deep Learning for Robotic Manipulation**

Google 3D Deep Learning Workshop in Mountain View / Oct. 2018

**3D Scene Understanding for Robotic Manipulation**

Intel VEC Program in Santa Clara / Oct. 2018

**Efficient Self-supervision in Deep Robotic Learning**

RE·WORK Deep Learning for Robotics Summit 2018 / June 2018

**Self-supervised Deep Learning for Model-free Grasping and Object Pose Estimation**

NCTU Robotics Seminar: Robotic Manipulation - Perception, Planning, Design / Nov. 2017

**Robotic Pick-and-Place of Novel Objects**

Google X and Google Brain in Mountain View / Nov. 2017

**Deep Learning for Robotic Manipulation**

Deep Learning for Graphics and Vision Seminar at Princeton University / Apr. 2017

**Self-supervised Deep Learning**

Deep Learning for Graphics and Vision Seminar at Princeton University / Mar. 2017

**Self-supervised Learning Local Geometric Descriptors from 3D Reconstructions**

Pixl Talks at Princeton University / Nov. 2016

**Lessons Learned from the Amazon Picking Challenge**

CS Seminar at Princeton University / July 2016

**Primitive-Level 3D Deep Learning**

CVPR Tutorial: 3D Deep Learning / June 2016

## Leadership

**Team MIT-Princeton at the Amazon Picking Challenge** • Princeton Lead / 2015 - 2017

Robotic Perception Technology Development

1st Place Winners (Stow Task) in 2017 / 3rd Place Winners in 2016

**Upsilon Pi Epsilon (CS Honor Society at UC Berkeley)** • President / 2013 - 2015

The Berkeley Forum • IT Chair and Site Production Lead / 2012 - 2014

## Teaching

Princeton COS 426 Computer Graphics • Teaching Assistant / Spring 2017

Princeton COS 429 Computer Vision • Teaching Assistant / Fall 2017

Berkeley CS61a Struct. and Interp. of Computer Programs • Lab Assistant / Fall 2012

## Mentoring

Princeton Undergraduate Research

- Ed Walker (now at Built Robotics)
- Prem Qu Nair (now at Nuro Robotics)

## Activities

Paper Reviewing

- IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
- IEEE International Conference on Robotics and Automation (ICRA)
- Neural Information Processing Systems (NeurIPS)
- Robotics: Science and Systems (RSS)
- The International Journal of Robotics Research (IJRR)
- IEEE International Conference on Intelligent Robots and Systems (IROS)
- Conference on Robot Learning (CoRL)
- IEEE Robotics and Automation Letters (RA-L)
- European Conference on Computer Vision (ECCV)
- IEEE International Conference on Computer Vision (ICCV)
- Special Interest Group on Computer GRAPHics and Interactive Techniques (SIGGRAPH)
- Pattern Recognition (PR, Journal)
- Eurographics (EG)
- IEEE Transactions on Image Processing (TIP)
- IEEE International Conference on Automation Science and Engineering (CASE)
- IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)

Conference Tutorial/Workshop Organization

Tutorial: 3D Deep Learning, CVPR 2016

Other Technical Activities

Berkeley ASUC Office of the President, iOS Mobile Application Developer, 2014

## Press Coverage

“Google’s New Lab For Robotics Is Full Of Fast Learners”

by Cade Metz • The New York Times / Mar. 2019

“Google Teaches Robot to Toss Bananas Better Than You Do”

by Evan Ackerman • IEEE Spectrum / Mar. 2019

“Now Google's robotics lab focuses on machine learning”

by Mariella Moon • Engadget / Mar. 2018

“Robots that pick up and sort objects may improve warehouse efficiency”

by Mallory Locklear • Engadget / Feb. 2018

“Robo-picker grasps and packs”

by Jennifer Chu • MIT News / Feb. 2018