

Charles Ruizhongtai Qi

CONTACT INFORMATION	S297 James H. Clark Center Stanford, CA 94305	650-804-3839 rqi@stanford.edu
EDUCATION	Stanford University , CA Ph.D. Candidate, Artificial Intelligence (AI) Lab <ul style="list-style-type: none">• Advisor: Leonidas J. Guibas, GPA: 4.0/4.0 Tsinghua University , Beijing, China B.S., Electronic Engineering <ul style="list-style-type: none">• <i>Outstanding Graduate Award, Beijing</i> Aalto University , Helsinki, Finland Exchange, Electrical Engineering	2013 - <i>Present</i> 2009 - 2013 Autumn 2011
EXPERIENCES	Research Assistant, AI Lab, Stanford University Advisor: Prof. Leonidas Guibas Project: Visual Recognition with 3D Deep Learning <ul style="list-style-type: none">• Developing novel deep learning architectures for 3D understanding (<i>PointNet</i>).• Designing new frameworks for 3D object recognition (<i>Frustum PointNets</i>). Project: Image Understanding with 3D Shape Priors <ul style="list-style-type: none">• Invented <i>Render for CNN</i>, a scalable and overfit-resistant pipeline for synthesizing millions of images for object 3D viewpoint estimation. Software Engineer Intern, Nuro Inc. Host: Jiajun Zhu, CEO <ul style="list-style-type: none">• Developed successful deep learning models for visual perception and optimized run-time speed for deployment to real robots.• Conducted original research on 3D object detection and got state-of-the-art results on KITTI dataset. Submitted a paper and patent application. Software Engineer Intern, Google Self-Driving Car Team Host: Yun Jiang and Zhaoyin Jia <ul style="list-style-type: none">• Conducted research into an open problem in self-driving, collaborated with colleagues from many different teams, arrived at feasible solutions.• Designed deep visual models and applied them on large-scale datasets with Tensorflow. Research Assistant, AI Lab, Stanford University Mentor: Dr. Adam Coates and Prof. Andrew Ng Project: Evaluating Convolutional Neural Networks with Fixed-Point Arithmetics <ul style="list-style-type: none">• Worked on fix-point evaluations of deep convolutional neural networks• Studied bottlenecks and challenges of implementing deep convolutional neural networks on embedded hardware. Research Intern, Microsoft Research Asia Mentor: Thomas Moscibroda, Principal Researcher Project: Heuristic Algorithms for Efficient Cluster Resource Scheduling <ul style="list-style-type: none">• Developed a novel fault-tolerant algorithm for intra-cluster service scheduling and an event-driven simulator. The algorithm was adopted by Microsoft Azure.• Received <i>MSRA Star of Tomorrow Award</i>	Dec 2014 to <i>Present</i> Jun 2017 to Sep 2017 Jun 2016 to Sep 2016 Apr 2014 to Jun 2014 Nov 2012 to May 2013

PUBLICATIONS Google Scholar: <https://goo.gl/s8NYw3>

- **Charles R. Qi**, Wei Liu, Chenxia Wu, Hao Su, and Leonidas J. Guibas, "Frustum PointNets for 3D Object Detection from RGB-D Data", *arXiv preprint*. Our method ranks at **first place** on KITTI 3D object detection benchmark for all object categories (lastly checked on 12/3/2017).
- **Charles R. Qi**, Li Yi, Hao Su, and Leonidas J. Guibas, "PointNet++: Deep Hierarchical Feature Learning on Point Sets in a Metric Space", *NIPS 2017*.
- **Charles R. Qi**, Hao Su, Kaichun Mo, and Leonidas J. Guibas, "PointNet: Deep Learning on Point Sets for 3D Classification and Segmentation", Conference on Computer Vision and Pattern Recognition (CVPR) 2017. *Oral presentation*
- Angela Dai, **Charles R. Qi**, Matthias Niessner, "Shape Completion using 3D-Encoder-Predictor CNNs and Shape Synthesis", Conference on Computer Vision and Pattern Recognition (CVPR) 2017. *Spotlight oral presentation*
- **Charles R. Qi**, Hao Su, Matthias Niessner, Angela Dai, Mengyuan Yan, and Leonidas J. Guibas, "Volumetric and Multi-View CNNs for Object Classification on 3D Data", Conference on Computer Vision and Pattern Recognition (CVPR) 2016. *Spotlight oral presentation*
- Yangyan Li, Soeren Pirk, Hao Su, **Charles R. Qi**, Leonidas J. Guibas, "FPNN: Field Probing Neural Networks for 3D Data", Conference on Neural Information Processing Systems (NIPS) 2016.
- Hao Su, Yangyan Li, **Charles R. Qi**, Leonidas Guibas, "Joint Embeddings of Shapes and Images via CNN Image Purification", ACM Transactions on Graphics, Proceedings of SIGGRAPH Asia 2015.
- **Charles R. Qi**, Hao Su, Yangyan Li, Leonidas Guibas, "Render for CNN: Viewpoint Estimation in Images Using CNNs Trained with Rendered 3D Model Views", International Conference on Computer Vision (ICCV) 2015. *Oral presentation*
- Fernando A. Mujica, William J. Esposito, Alex Gonzalez, **Charles R. Qi**, Chris Vassos, Maisy Wieman, Reggie Wilcox, Gregory T. A. Kovacs, and Ronald W. Schafer, "Teaching Digital Signal Processing with Stanford's Lab-In-a-Box", IEEE Signal Processing and Signal Processing Education Workshop 2015.

Undergraduate

- **Ruizhongtai Qi**, "High Definition LCD Test Equipment Design", Microcomputer and Its Applications, China, 2011 Vol 13.
- **Ruizhongtai Qi**, Zhi Zhai, David Hachen, Tracy Kijewski-Correa, Gregory Madey, "Citizen Engineering: Crowdsourcing for Urgent Human Computing", 2012 Undergraduate Research Summer Symposium, University of Notre Dame.

TALKS

- Frustum PointNets for 3D Object Detection from RGB-D Data
 - Invited talk at SAIC USA, San Jose, January 2018
 - Invited talk at Uber ATG, San Francisco, December 2017
 - Invited talk at Jingchi Inc., Sunnyvale, December 2017
- Deep Learning on 3D Point Cloud with PointNet and PointNet++
 - Invited talk at Drive.ai, Mountain View, October 2017
 - 3D Deep Learning Tutorial at CVPR'17, Honolulu, July 2017

- PointNet: Deep Learning on Point Sets for 3D Classification and Segmentation
 - Invited talk at Autodesk, San Francisco, June 2017
 - Invited talk at TuSimple, San Diego, June 2017
- Introduction to Deep Learning
 - Invited lecture for CS468 Machine Learning on 3D Data, Stanford, May 2017
- Render For CNN: 3D Recognition in Images Using CNNs Trained with Rendered Model Views (Slides)
 - Invited talk at DeepMap, Palo Alto, April 2017

AWARDS

Research Awards

- Star of Tomorrow, Microsoft Research Asia May 2013
- First Prize of Student Research Training projects, Tsinghua May 2012

Fellowships

- Stanford EE PhD Fellowship, Stanford 2013
- National Scholarship, China (highest prize. won twice) 2010, 2012
- Comprehensive Excellence Scholarship, Tsinghua 2011
- Freshman Scholarship (3rd place in NCEE, Zhejiang), Tsinghua 2009

ACADEMIC SERVICES

Course Assistant

- Digital Signal Processing (EE264) Winter 2014

Conference and Journal Reviewer

- CVPR, ICCV, 3DV, SIGGRAPH Asia, Eurographics, TVCG, TVCJ, TITS

COURSES

- *Systems*: Operating Systems and Systems Programming (CS140), Introduction to Database (CS145), Parallel Computing (CS149)
- *AI*: Mining Massive Data Sets (CS246), Artificial Intelligence: Principles and Techniques (CS221), Machine Learning (CS229), Natural Language Processing (CS224N), Convex Optimization (EE364A), Convolutional Neural Networks for Visual Recognition (CS231N), Modern Applied Statistics: Data Mining (STATS315B)

SKILLS

Programming

- Over 10,000 lines: Python, C/C++, Matlab
- Over 1,000 lines: Java, C#, Shell, SQL, Verilog, CUDA, R, L^AT_EX

Machine Learning Toolkits

- liblinear, xgboost
- Tensorflow, Caffe, Torch, Theano

System Tools

- Unix, MapReduce, Hadoop, AMT, AS3

LINKS

- Personal homepage: <http://charlesrqi.com>
- GitHub page (1,000+ stars): <http://github.com/charlesq34>