

Charles Ruizhongtai Qi

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EDUCATION **Stanford University**, CA

Ph.D. Candidate, Artificial Intelligence Lab, Sep 2013 - *Present*

- Topic: 3D Deep Learning for Semantic Understanding and Geometry Inference
- Advisor: Leonidas J. Guibas

Tsinghua University, Beijing, China

B.S., Electronic Engineering, July 2013

- *Outstanding Graduate Award, Beijing*

Aalto University, Helsinki, Finland

Exchange, Electrical Engineering, Autumn 2011

EXPERIENCES **Research Assistant, AI Lab, Stanford University** Dec 2014 to *Present*
Advisor: Prof. Leonidas Guibas

Project: Data-driven 3D machine perception with deep learning

- Deep learning on 3D data (multi-view images, depth images, meshes, point clouds) for semantic understanding of scenes.
- Joint embeddings of images and shapes that support image based model retrieval.
- Render for CNN, a scalable and overfit-resistant pipeline for synthesizing millions of images for object 3D viewpoint estimation.

Software Engineer Intern, Google Self-Driving Car Team Jun 2016 to Sep 2016

Host: Yun Jiang, Zhaoyin Jia

Project: Machine learning and deep learning for visual perception.

- Formulated machine learning problems, designed sophisticated models and applied them on large-scale data set with Tensorflow.
- Independent research into open problems and arrived at feasible solutions.

Research Assistant, AI Lab, Stanford University Apr 2014 to Jun 2014

Mentor: Prof. Andrew Ng, Adam Coates, Ph.D.

Project: Convolutional neural network fixed-point evaluations.

- Worked on fixed-point evaluations of deep convolutional neural network with pooling, LCN and millions of parameters.
- Studied the bottlenecks of network evaluations and the challenges of implementation of large CovNets on embedded hardware.

Research Intern, Microsoft Research, Asia Nov 2012 to May 2013

Mentor: Thomas Moscibroda, Senior Researcher

Project: Heuristic algorithm for efficient cluster service scheduling.

- Developed fault-tolerant algorithms for intra-cluster service scheduling as well as an event-driven simulator.
- Algorithm achieved 10% utilization boost and was adopted by Microsoft Azure.
- *MSRA Star of Tomorrow Award*

PUBLICATIONS

Graduate

- **Charles R. Qi**, Li Yi, Hao Su, and Leonidas J. Guibas, "PointNet++: Deep Hierarchical Feature Learning on Point Sets in a Metric Space", *Submission to 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 (acceptance rate: 2%)*
- 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

- Deep Learning on 3D Point Cloud with PointNet and PointNet++. 3D Deep Learning Tutorial at CVPR17, July 2017
- PointNet: Deep Learning on Point Sets for 3D Classification and Segmentation. Invited talk at Autodesk, June 2017
- PointNet: Deep Learning on Point Sets for 3D Classification and Segmentation. Invited talk at TuSimple, June 2017
- Introduction to Deep Learning. Invited lecturer for CS468 Machine Learning on 3D Data at Stanford, May 2017
- Render For CNN: 3D Recognition in Images Using CNNs Trained with Rendered Model Views. Invited talk at DeepMap, 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

Course Assistant

- Digital Signal Processing (EE264) Winter 2014

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: C++, Python, Matlab
- Over 1,000 lines: Java, C, C#, Shell, SQL, Verilog, CUDA, R, \LaTeX

Machine Learning Toolkits

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

System Tools

- Unix, MapReduce, Hadoop, AMT, AS3

LINKS

- [Personal Homepage](#)
- [Google Scholar](#)
- [GitHub Page](#)