Ziyu Zhang

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EDUCATION

Northwestern University, Evanston, Illinois, U.S.
Master of Science in Computer Science (Course-based) Sep 2016 – Jun 2017 (Expected)

University of Toronto, Toronto, Ontario, Canada
Master of Science in Computer Science (Thesis-based) Sep 2014 – Jun 2016
- GPA: 3.93/4.00
- Research Areas: Computer Vision, Machine Learning
- Advisors: Prof. Raquel Urtasun, Prof. Sanja Fidler
- Thesis: Instance-level Segmentation with CNNs and Densely Connected MRFs

Tsinghua University, Beijing, China
Bachelor of Engineering in Electronic Information Sci & Tech Sep 2009 – Jun 2013
- GPA: 91.2/100
- Advisor: Prof. Hongtao Li
- Thesis: A Study on Optimal Design of Freeform Optical Surfaces

Minor in Economics Sep 2010 – Jun 2013

PUBLICATIONS

Unnat Jain*, Ziyu Zhang* and Alexander Schwing. *Creativity: Generating Diverse Questions Using Variational Autoencoders*. **CVPR 2017**. **(* indicates equal contributions)**

Ziyu Zhang, Sanja Fidler and Raquel Urtasun. *Instance-level Segmentation for Autonomous Driving with Deep Densely Connected MRFs*. **CVPR 2016**.

Xiaozhi Chen, Kaustav Kundu, Ziyu Zhang, Huimin Ma, Sanja Fidler and Raquel Urtasun. *Monocular 3D Object Detection for Autonomous Driving*. **CVPR 2016**.

Ziyu Zhang*, Alexander Schwing*, Sanja Fidler and Raquel Urtasun. *Object Instance Segmentation and Depth Ordering with CNNs*. **ICCV 2015**. **(* indicates equal contributions)**

RESEARCH EXPERIENCE

University of Toronto, Toronto, Ontario, Canada
Graduate Research Assistant Sep 2014 – Jun 2016
- Advisors: Prof. Raquel Urtasun, Prof. Sanja Fidler
- Research Areas: Computer Vision, Machine Learning
- **Project 1: Monocular Instance Segmentation and Depth Ordering for Autonomous Driving**
  - Proposed a feedforward network for instance segmentation and depth ordering given monocular image patches
  - Presented a novel densely connected Markov random field (amenable to efficient inference) which aggregates patch-level predictions and provides a globally coherent instance map
  - Contributed a car instance dataset based on the KITTI benchmark
  - The proposed method performs instance segmentation without object detection and achieves very good results
- **Project 2: Monocular 3D Object Detection for Autonomous Driving**
  - Presented an energy minimization framework that scores candidate 3D cuboids via intuitive potentials encoding semantic/instance segmentation, contextual information, size/location priors and typical object shapes
  - Ranked 9th/6th/7th for car/pedestrian/cyclist on the KITTI object detection leaderboard as of Jun 2016
- **Project 3: Semantic Segmentation/Label Propagation for Video Sequences**
  - Proposed a joint model on *car vs. non-car* segmentation and CAD model fitting for consecutive video frames
  - Investigated an alternating inference algorithm for the model

Tsinghua University, Beijing, China
Undergraduate Research Assistant — Sep 2012 – Jun 2013

- Advisor: Prof. Hongtao Li
- Research Area: Freeform Optics
- **Project: Optimal Design of Freeform Optical Surfaces**
  - Developed an integrated platform in Matlab environment for optimal design of freeform optical surfaces
  - Investigated the bi-cubic NURBS surface interpolation method to replace external 3D modeling software
  - Implemented a ray-tracing method in Matlab environment to replace external optical simulation software

TEACHING EXPERIENCE

University of Toronto, Toronto, Ontario, Canada
Graduate Teaching Assistant — Sep 2014 – Dec 2014

- Course: Machine Learning and Data Mining (Fall 2014)
- Instructors: Prof. Richard Zemel, Prof. Raquel Urtasun

INVITED TALKS

Baidu Institute of Deep Learning — Oct 2016
Apple — Mar 2016

ACADEMIC HONORS & AWARDS

Entrance Scholarship, Dept. of Computer Science, U. of Toronto — 2014 – 2016
awards to outstanding admitted students

Tuition Fellowship, Department of Computer Science, University of Toronto — 2014 – 2016
provides partial support for graduate studies

Scholarship for Outstanding Academic Performance, Tsinghua University — 2011 – 2013
awards to undergraduates with outstanding academic performance

Freshman Scholarship, Tsinghua University — 2009 – 2010
awards to top scorers in the National Higher Education Entrance Examination (China)

Shuping Scholarship, Shuping Scholarship Foundation — 2007 – 2009
one of the highest distinctions to high school students nationwide

LANGUAGES

Mandarin Chinese: Native
English: Fluent

SKILLS

C/C++, Python, Matlab, Caffe, TensorFlow