JUSTIN LIANG

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EDUCATION

University of Toronto   Sept 2016 - May 2018
Master of Science, Computer Science
Machine Learning Group
Supervisor: Raquel Urtasun
GPA: 4.00, A+

University of British Columbia   Sept 2011 - May 2016
Bachelor of Applied Science, Mechanical Engineering
Mechatronics Option
90.3/100 — Rank: 1/34, A+

PUBLICATIONS

S.Duggal, Z. Wang, W.C. Ma, S. Manivasagam, **J. Liang***, S. Wang, R. Urtasun. Mending Neural Implicit Modeling for 3D Vehicle Reconstruction in the Wild. (WACV 2022)

N.Homayounfar, **J. Liang***, W.C. Ma, R. Urtasun. VideoClick: Video Object Segmentation with a Single Click. (Arxiv 2021)

N.Homayounfar*, Y. Xiong*, **J. Liang***, W.C. Ma, R. Urtasun. LevelSet R-CNN: A Deep Variational Method for Instance Segmentation. (ECCV 2020)

J. Liang, N.Homayounfar, W.C. Ma, Y. Xiong, R. Hui, R. Urtasun. PolyTransform: Deep Polygon Transforming for Instance Segmentation. (CVPR 2020)

N.Homayounfar, W.C. Ma, **J. Liang**, X. Yu, J. Fan, R. Urtasun. Learning to Map by Discovering the Deep DAG Topology (ICCV 2019)

J. Liang*, N. Homayounfar*, W. C. Ma, S. Wang, R. Urtasun. Convolutional Recurrent Network for Road Boundary Extraction. (CVPR 2019)

J. Liang, R. Urtasun. End-to-End Deep Structured Models for Drawing Crosswalks. (ECCV 2018)

S. Wang, M. Bai, G. Mattyus, H. Chu, W. Luo, B. Yang, **J. Liang**, J. Cheverie, S. Fidler, R. Urtasun. TorontoCity: Seeing the World with a Million Eyes. (ICCV 2017, **Spotlight**)

RESEARCH EXPERIENCE

Research Assistant, Machine Learning Group, Dept. of Computer Science, UofT   Sept 2016 - May 2018

Advisor: Prof. Raquel Urtasun
· Designed models using neural networks to automatically map the world.
· Performed building footprint shape reconstruction on aerial images.
· Developed algorithms to automatically annotate crosswalks.
· Implemented a model to automatically classify lane markings.

Research Assistant, Clean Energy Research Lab, Dept. of Mechanical Engineering, UBC   May 2013 - Aug 2013

Advisor: Prof. Steven Rogak, Dr. James Montgomery
· Designed experimental setup to test HVAC filters.

· Conducted analysis to predict energy use and operation cost of HVAC filters.

WORK EXPERIENCE

Research Scientist II, Waabi · Mar 2021 - Present

· Working on machine learning algorithms for autonomous vehicles

Research Scientist II, Uber ATG · Sept 2018 - Feb 2021

· Worked on machine learning algorithms for autonomous vehicles

Research Scientist I, Uber ATG · Oct 2017 - Aug 2018

· Worked on machine learning algorithms for autonomous vehicles

Research Intern, Uber ATG · July 2017 - Sept 2017

· Worked on machine learning algorithms for autonomous vehicles

Software Development Intern, Verity Studios (ETH Spin-Off) · Jan 2015 - Aug 2015

· Built a parameter server in C++ to save and load parameter data onto quadcopters.
· Developed user interfaces using Qt and ROS.

Controls Systems Engineer, Brock Solutions · May 2014 - Aug 2014

· Wrote VBA scripts to automatically generate excel checklists.
· Troubleshooted PLC ladder logic for controlling luggage conveyors at YVR.

Controls Design Support Engineer, Confirmed Automation Systems · Sept 2013 - Dec 2013

· Designed mechanical and hardware solutions for industrial processing plants.

VOLUNTEER EXPERIENCE

Software Engineer, UBC Snowbots School Team · Sept 2014 - Aug 2015

· Implemented pathfinding algorithms on autonomous robot.

Electrical Engineer, UBC SuperMileage School Team · Sept 2012 - Apr 2013

· Built test setup to evaluate vehicle performance.

AWARDS AND HONOURS

Google Travel and Conference Grant (CVPR 2017)	2017
University of Toronto Graduate Fellowship	2016
Letson Prize	2016
Frank Vernon Memorial Scholarship 2x	2015, 2013
Charles and Jane Banks Scholarship	2014
NSERC Undergraduate Student Research Award	2013
Trek Excellence Scholarship 2x	2013, 2012
Association of Professional Engineers and Geoscientists Scholarship	2012
British Columbia Government Scholarship	2012
Top Science Student Award (Secondary School)	2011
Euclid Math Contest School Champion (Secondary School)	2011

PATENTS

N.Homayounfar, Y Xiong, **J. Liang**, W.C.Ma, R.Urtasun. High Quality Instance Segmentation. U.S. Patent Application 17/017,104 (2021)

J. Liang, N. Homayounfar, W.C. Ma, Y. Xiong, R. Urtasun. Systems and Methods for Predicting Instance Geometry. U.S. Patent Application 17/007,667 (2021)

N. Homayounfar, **J. Liang**, R. Urtasun. System and Methods for Generating High Definition Maps Using Machine-Learned Models to Analyze Topology Data Gathered From Sensors. U.S. Patent Application 16/825,518 (2020)

J. Liang, R. Urtasun. Structured Prediction Crosswalk Generation. U.S. Patent Application 16/183,012. (2019)

J. Liang, R. Urtasun. Map Automation-Lane Classification. U.S. Patent Application 16/353,871 (2019)

SKILLS

Languages	Python, C, C++, MATLAB
Scientific Packages	Pytorch, NumPy, Shapely, OpenCV