Zichen(Vincent) Zhang

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Education

01/2018–present **University of Alberta, Edmonton, AB, Canada**,
Ph.D. Student in Computer Science, Statistical Machine Learning Program,
Supervisors: Martin Jagersand, Dale Schuurmans.

07/2015–12/2017 **University of Alberta, Edmonton, AB, Canada**,
Master of Science, in Computer Science, GPA 4.0/4.0,
Supervisors: Martin Jagersand, Dana Cobzas,
Thesis: Improving Semantic Image Segmentation by Object Localization.

09/2009–09/2012 **Dalhousie University, Halifax, NS, Canada**,
Master of Applied Science, in Electrical Engineering, GPA 4.3/4.3,
Supervisor: Jason Gu,
Thesis: Grasp Planning of 3D Objects Using Genetic Algorithm.

09/2005–06/2009 **Huazhong University of Science and Technology (HUST), Wuhan, China**,
Bachelor of Engineering, in Electrical Engineering, GPA: 85/100.

Professional Experience

05/2018–present **Machine Learning Scientist Intern, Part-time**, *Medo.ai*, Edmonton, AB.
- Lead developer of the deep learning infrastructure at this Startup
- Developing image segmentation methods for large-scale medical image data
- Used AWS stacks to deploy deep learning algorithms: Sagemaker, Cloud9, Lambda, S3, EC2

06/2013–05/2015 **Web Application Developer**, *NTT Data Inc.*, Halifax, NS.
- Worked on a multi-tier web-based information management system, on a two-week release cycle
- Developed bash scripts to automate the developer environment setup and managed the integration and continuous integration(CI) servers. Packed a Python application into a Debian package
- Led a team of three to win "the Coolest Project" in company's annual Hackathon
  - Used Puppet to Automate Dev Environment. Sped up the setup process from 1-2 days to under 1 second.
  - Pitched the idea to client VP of R&D, which then got promoted to be a real project

11/2012–04/2013 **Research Engineer**, *Mechanical Engineering Dept., Dalhousie University*, NS.
- Designed and developed teleoperation programs in C++ with ROS for iRobot Create robot and Robucar
- Developed a ROS driver with multi-threaded design in Python for the Robucar (a ground vehicle for research), which wrapped up the RS232 serial protocol of the lower level control board

Recent Research Projects

10/2018–present **Reducing Selection Bias in Counterfactual Reasoning**.
- It's a group project where I proposed and implemented a method of reducing the selection bias by modifying the loss function
- Achieved state-of-the-art result on a dataset for estimating individual treatment effects

01/2018–04/2018 **Interactive Tool and Task Learning for Contact Motions on Unstructured Surfaces**.
- One of five finalists of the KUKA innovation challenge 2018
- Implemented algorithms for incremental object detection and developed the GUI
- Resulted in a co-first author ICRA paper

08/2017–01/2018 **Automatic Segmentation of Hip Acetabulum using Deep Neural Networks**.
- Developed a neural network based on Region Proposal Network and ROI convolution for segmenting small structure on hip ultrasound images
- Deployed the algorithm in a real-world web application which extended to the webapp at Medo.ai.
- Resulted in a first author ISBI paper and the intern position at Medo.ai.

07/2017–09/2017 **MICCAI Robotic Instrument Segmentation challenge 2017**.
- Implemented algorithms for the segmentation of Robotic Instrument from endoscopic images.
- A joint paper to be submitted to Medical Image Analysis (MIA) journal, available on arXiv

Technical Skills

Languages Python, Matlab, C++, C

Tools Caffe, Keras, TensorFlow, PyTorch, ROS, Linux, SVN&Git, Flask, Pylons

Awards & Scholarships

02/2018 **Science Graduate Scholarship**, *Faculty of Science, University of Alberta.*

01/2018 **Alexander Graham Bell Canada Graduate Scholarship-Doctoral (CGS D)**, *U of Alberta.*

01/2018 **Alberta Innovates - Graduate Student Scholarship (AITF - PhD)**, *University of Alberta.*

01/2018 **President's Doctoral Prize of Distinction**, *University of Alberta.*

11/2016 **Science Graduate Scholarship**, *Faculty of Science, University of Alberta.*

09/2016 **NSERC Canada Graduate Scholarships–Master's Program (CGSM)**, *University of Alberta.*

09/2016 **Alberta Innovates Technology Futures Scholarship (AITF - Master)**, *University of Alberta.*

09/2016 **Walter H Johns Graduate Fellowship**, *University of Alberta.*

Selected Publications

Google Scholar: Citation: 38, `https://scholar.google.com/citations?user=nSh2eD4AAAAJ&hl=en`

1 **Online Tool and Task learning via Human Robot Interaction**,
Masood Dehghan*, ***Zichen Zhang***, Mennatullah Siam*, Jun Jin, Laura Petrich, Martin Jagersand.
* equal contribution. Accepted in the International Conf. on Robotics and Automation (ICRA) 2019

2 **Robot eye-hand coordination learning by watching human demonstrations: a task function approximation approach**,
Jun Jin, Laura Petrich, Masood Dehghan, ***Zichen Zhang***, Martin Jagersand
Accepted in the International Conference on Robotics and Automation (ICRA) 2019

3 **End-to-end detection-segmentation network with ROI convolution**,
Zichen Zhang, Min Tang, Dana Cobzas, Dornoosh Zonoobi, Martin Jagersand, Jacob L. Jaremko,
In Biomedical Imaging (ISBI 2018), 2018 IEEE 15th International Symposium on (pp. 1509-1512).

4 **Segmentation-by-Detection: A Cascade Network for Volumetric Medical Image Segmentation**,
Min Tang, ***Zichen Zhang***, Dana Cobzas, Martin Jagersand, Jacob L. Jaremko.,
In Biomedical Imaging (ISBI 2018), 2018 IEEE 15th International Symposium on (pp. 1356-1359).

5 **Real-time edge template tracking via homography estimation**,
Xuebin Qin, Shida He, ***Zichen Zhang***, Masood Dehghan, Jun Jin, Martin Jagersand
2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), pp. 607-612

6 **A deep level set method for image segmentation**,
Min Tang, Sepehr Valipour, ***Zichen Zhang***, Dana Cobzas, Martin Jagersand,
Medical Image Computing and Computer Assisted Interventions Conference (MICCAI) Workshop on Deep Learning in Medical Image Analysis (DLMIA), Quebec City, Canada, Page 126-134. 2017