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Zichen(Vincent) Zhang

Research Interest

Machine Learning, Computer Vision and Robotics.

Education

01/2018–present **University of Alberta, Edmonton, AB, Canada**,
Ph.D. Candidate in Computer Science,
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

06/2013–05/2015 **Web Application Developer**, *NTT Data Inc.*, Halifax, NS.

- Designed, developed, tested and documented code to maintain and enhance 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
- Active contributor in company's annual Innovation Day events (Hackathon)
  - Project I: Use Puppet to Automate Dev Environment.
    Sped up the setup process from 1-2 days to under 1 second. Voted as "the Coolest Project".
    Team lead of three. Pitched the idea to client VP of R&D, which then got promoted to be a real project
  - Project II: Drilling data search with Solr and user activity visualization with Heatmap.js.

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

Research Projects

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
- Collaborated with a startup to have it deployed in a real-world web application `http://www.niduscanada.com`

06/2015–12/2015 **Automatic Multiple Sclerosis(MS) Lesion Segmentation**.

- Applied a multi-scale dictionary learning algorithm to segment lesions in brain MRI

02/2010–12/2010 **A smartphone-based ECG(ElectroCardioGraphy) analysis system**.

- Worked closely with a team at Kanayo Software Inc., including weekly meetings and reports
- Transferred the needs of the client to technical plans and adequately explained it back
- Developed and implemented an ECG signal analysis algorithm for monitoring heart condition, improved the performance of existing ECG tele-monitoring systems

Technical Skills

Languages Python, Matlab, C++, C

Technologies Caffe, ROS, Linux, SVN&Git, MySQL, Pylons, JSON, Protobuf, DataTables, Jenkins

Extracurricular Activities

05/2017 **Volunteer for 2017 AI/GI/CRV Conference**, *Edmonton, AB.*

07/2013–05/2014 **Chair of Computer Society**, *IEEE Canadian Atlantic Section.*
Organized public talks in computer science

01/2013–05/2015 **Webmaster**, *IEEE Canadian Atlantic Section.*

- 2013 Electrical Power and Energy Conference (EPEC). Also designed the theme using Wordpress
- 2014 IEEE Canada International Humanitarian Technology Conference
- 2015 Canadian Conference on Electrical and Computer Engineering (CCECE)

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.*

09/2010 **NSHRF Student Research Award**, *Nova Scotia Health Research Foundation (NSHRF).*
The only recipient in Dept. of Elec. & Comp. Eng. at Dalhousie University of the year 2010/2011

09/2010 **FGS Dept Allocation Scholarship**, *Faculty of Graduate Study*, Dalhousie Univ.
Awarded to students with high academic record

08/2010 **Bruce and Dorothy Rosetti Engineering Research Scholarship**,
Faculty of Engineering, Dalhousie Univ.
Awarded on the basis of the student's academic achievement and on letters of reference

Publications

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

1 **End-to-end detection-segmentation network with ROI convolution**,
Zichen Zhang, Min Tang, Dana Cobzas, Dornoosh Zonoobi, Martin Jagersand, Jacob L. Jaremko,
accepted at IEEE International Symposium on Biomedical Imaging (ISBI) 2018.

2 **Segmentation-by-Detection: A Cascade Network for Volumetric Medical Image Segmentation**,
Min Tang, ***Zichen Zhang***, Dana Cobzas, Martin Jagersand, Jacob L. Jaremko.,
accepted at IEEE International Symposium on Biomedical Imaging (ISBI) 2018.

3 **Real-time salient closed boundary tracking using perceptual grouping and shape prior**,
Xuebin Qin, Shida He, ***Zichen Zhang***, Masood Dehghan, Martin Jagersand,
British Machine Vision Conference (BMVC) 2017, Imperial College London 4th-7th September 2017.

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

5 **Evaluation of genetic algorithm on grasp planning optimization for 3D object: A comparison with simulated annealing algorithm**,
Zichen Zhang, Jason Gu, Jun Luo,
Industrial Electronics(ISIE), 2013 IEEE International Symposium on, pp.1,8, 28-31 May 2013

6 **Grasp planning of 3D objects using genetic algorithm**,
Zichen Zhang, Jason Gu,
Automation and Logistics(ICAL), 2012 IEEE International Conference on, pp.646-651, 15-17 Aug. 2012

7 **Time-domain ECG signal analysis based on smart-phone**,
Shijie Zhou, ***Zichen Zhang*** and Jason Gu,
Engineering in Medicine and Biology Society,EMBC, 2011 Annual International Conference of the IEEE , vol., no., pp.2582-2585, Aug. 30 2011-Sept. 3 2011

8 **Interpretation of coarse-graining of Lempel-Ziv complexity measure in ECG signal analysis**,
Shijie Zhou, ***Zichen Zhang*** and Jason Gu,
Engineering in Medicine and Biology Society,EMBC, 2011 Annual International Conference of the IEEE , vol., no., pp.2716-2719, Aug. 30 2011-Sept. 3 2011

9 **Analysis and design of repetitive controlled Power Electronic Load Simulator with high dynamic performance**,
Rong Zhang, ***Zichen Zhang*** and Jian Chen,
Power Electronics and Motion Control Conference, 2009. IPEMC '09. IEEE 6th International vol., no., pp.2603-2607, 17-20 May 2009