

# Eu Wern Teh

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## Summary

I am a Ph.D. candidate in the School of Engineering at the University of Guelph where I am advised by Prof. Graham Taylor. I received both of my M.Sc. and B.Sc. degree in Computer Science from the University of Manitoba.

My research is focused on annotation-efficient learning, a.k.a learning with less label, where I explore ways to survive in a SParsely Annotated Data Environment (SPADE).

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## Experience

### Modiface Inc.

7 ST. THOMAS STREET. #502, TORONTO, ON, CANADA

#### Machine Learning Research Intern

May '20 – Oct '20

Researching on semi-supervised learning techniques for semantic segmentation on natural objects and urban street scenes.

### Machine Learning Research Group, SOE

UNIVERSITY OF GUELPH, GUELPH, ON, CANADA

#### Graduate Research Assistant

Sep '17 – present

Researching deep learning techniques to solve various computer vision tasks. (e.g. semi supervised learning, active learning, transfer learning and data augmentation.)

### Computer Vision Lab

UNIVERSITY OF MANITOBA, WINNIPEG, MB, CANADA

#### Graduate Research Assistant

Sep '15 – Sep '17

Researched on deep learning techniques to solve computer vision task. My thesis is about solving weakly supervised object localization via attention-based network. In addition, I also worked on domain adaptation and transfer Learning from image to video dataset for weakly supervised object localization and detection.

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## Education

### University of Guelph

GUELPH, ONTARIO, CANADA

Ph.D. in Engineering

2017 – present

Courses: Introduction to Machine Learning, Deep Learning, Machine Vision, Computational Statistics

### University of Manitoba

WINNIPEG, MANITOBA, CANADA

M.Sc. in Computer Science

2015 – 2017

Thesis: *Weakly Supervised Object Localization Using Attention-based Neural Networks.*

Courses: Probabilistic Graphical Models, Computational Perception & Cognition, Parallel Computing, Graph Drawing, Research Methodologies.

### University of Manitoba

WINNIPEG, MANITOBA, CANADA

B.Sc. in Computer Science & Engineering

2006 – 2011

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## Skills

**Research expertise:** Deep Learning, Computer Vision, Convolutional Neural Network (CNN), Recurrent Neural Network, Attention based Networks, Machine Learning, Metric Learning, Annotation-efficient Learning

**Deep Learning/Machine Learning Framework:** Torch, PyTorch, TensorFlow, Caffe, MatconvNet, Scikit-learn, libsvm

**Technical expertise:** C++, Python, Matlab, Lua, C, R, PHP, C#, Java, JavaScript, SQL, RPGLE, CLLE

**Others:** Slurm, Linux, Eclipse, Tmux, Vim, Visual Studio, Microsoft SQL Server, Oracle, Latex, ASP.net, Team Foundation Server, RStudio, Git, Gitlab, Github, Pandas

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## Publications

- Eu Wern, Teh.,** and Graham, Taylor. (2022) "Learning with less labels in Digital Pathology via Scribble Supervision from natural images." International Symposium on Biomedical Imaging (ISBI) (poster presentation)
- Eu Wern, Teh.,** and Graham, Taylor. (2022) "Understanding the impact of image and input resolution on deep digital pathology patch classifiers." (Submitted to MIDL2022)
- Eu Wern, Teh.,** Terrance, DeVries., Brendan, Duke. Ruowei, Jiang., Parham, Aarabi., and Graham, Taylor. The GIST and RIST of Iterative Self-Training for Semi-Supervised Segmentation (Submitted to CRV2022)
- Eu Wern, Teh.,** Terrance, DeVries., and Graham, Taylor. (2020) "ProxyNCA++: Revisiting and Revitalizing Proxy Neighborhood Component Analysis." European Conference on Computer Vision (ECCV) (poster presentation)
- Eu Wern, Teh.,** and Graham, Taylor. (2020) "Learning with less data via Weakly Labeled Patch Classification in Digital Pathology." International Symposium on Biomedical Imaging (ISBI) (poster presentation)
- Eu Wern, Teh.,** and Graham, Taylor. (2019) "Metric Learning for Patch Classification in Digital Pathology." Medical Imaging with Deep Learning (MIDL) (poster presentation)
- Eu Wern, Teh.,** and Graham, Taylor. (2019) "Apparent Age Estimation with Relational Networks." Conference on Computer and Robot Vision (CRV) (oral presentation)
- Eu Wern, Teh.,** Zhenyu, Guo., and Yang, Wang. (2017) Object Localization in "Weakly Labeled Data Using Regularized Attention Networks." In Proceedings of the IEEE Visual Communications and Image Processing (poster presentation, master thesis)
- Omit, Chanda., **Eu Wern, Teh.,** Mrigank, Rochan., Zhenyu, Guo., and Yang, Wang. (2017) "Adapting Object Detectors from Images to Weakly Labeled Videos." In Proceedings of the British Machine Vision Conference (poster presentation)
- Eu Wern, Teh.,** Mrigank, Rochan., and Yang, Wang. (2016) "Attention networks for weakly supervised object localization." In Proceedings of the British Machine Vision Conference (poster presentation, master thesis)

## Honors & Awards

- Graduate Excellence Entrance Scholarship (GEES), University of Guelph, 2017.
- Graduate Enhancement of Tri-Council Stipends (GETS), University of Manitoba, 2015 - 2017.
- Conference Travel Grant, Department of Computer Science and Faculty of Science, University of Manitoba, 2016.
- International Undergraduate Student Scholarship, University of Manitoba, 2007 - 2008.

## Professional Services

- Reviewer at MICCAI 2020
- External reviewer at NeurIPS 2016, CVPR 2017

## References

- Graham Taylor (Associate Professor at University of Guelph)  
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contact: 519-824-4120 (ext:53644)
- Yang Wang (Assistant Professor at University of Manitoba)  
email: ywang@cs.umanitoba.ca  
contact: 204-474-9740
- Neil D.B. Bruce (Associate Professor at University of Guelph)  
email: brucen@uoguelph.ca  
contact: N/A