Eu Wern Teh

Summary

As an AI Research Scientist at LG Electronics, I drive advancements in Speech-Driven Animation and Image Generation & Enhancement (SDR-to-HDR). I leverage my expertise in annotation-efficient learning to innovate in SCarcely Annotated Data Environments (SCADE), building robust AI models that deliver strong performance with limited data. My work has made an impact across diverse fields, from Cancer Classification in Digital Pathology and Fine-Grained Bird Species analysis to various commercial applications. I earned my Ph.D. in Engineering from the University of Guelph (advised by Prof. Graham Taylor), complementing my degrees from the University of Manitoba.

Experience

LG Electronics — 590 King St. W. #201, Toronto, ON, Canada
Machine Learning Research Scientist — *Sep '22 – Current*

- Driving research in Speech-to-3D Animation and 3D Facial Reconstruction.
- Developing advanced Image Generation and Enhancement techniques, including SDR-to-HDR image reconstruction.
- Developing cutting-edge personalized visual language models for personalized video understanding.

Modiface Inc. — 7 St. Thomas Street. #502, Toronto, ON, Canada
Machine Learning Researcher — *May '20 – Oct '20*

- Developing semi-supervised learning techniques for semantic segmentation of natural objects and urban street scenes.

Machine Learning Research Group (MLRG) — University of Guelph, Guelph, ON, Canada
Machine Learning Researcher — *Sep '17 – Sep '22*

- Driving annotation-efficient learning initiatives for applications such as cancer classification and segmentation (Digital Pathology), fine-grained bird species classification, and various retrieval tasks (shopping cart items, clothing, car models).
- Developing solutions for image-driven age estimation.

Computer Vision Lab (CVL) — University of Manitoba, Winnipeg, MB, Canada
Machine Learning Researcher — *Sep '15 – Sep '17*

- Pioneered deep learning techniques for computer vision tasks, focused on weakly supervised object localization via attention-based networks.
- Applied expertise in domain adaptation and transfer learning to extend weakly supervised object localization and detection from image to video datasets.

Johnston Group — 1051 King Edward St., Winnipeg, MB, Canada
Web Application Developer — *Jul '11 – Sep '15*

- Developed and maintained a suite of critical financial systems, including a Billing Inquiry System, Insurance Administrative System, Advisor Sales & Projection System, and an Insurance Quoting System..

Education

University of Guelph — Guelph, Ontario, Canada
Ph.D. in Engineering — *2017 – 2022*

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*

Skills

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

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Deep Learning/Machine Learning Framework: HuggingFace, 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.", Conference on Computer and Robot Vision (CRV)(poster presentation)

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, Conference on Computer and Robot Vision (CRV)(poster presentation)

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)
email: gwtaylor@uoguelph.ca
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
