Lyndon Chan

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lyndonchan.github.io | github.com/lyndonchan

Skills and Expertise

- **Expertise:** Machine Learning (neural networks, SVM, abnormality detection), Computer Vision (classification, detection, segmentation, multi-view geometry), NLP (search engine, entity extraction)
- **Programming:** Python (Keras, TensorFlow, PyTorch, Caffe), MATLAB, C/C++, Java, Ruby, R
- **Software:** LaTeX, Jupyter Notebook, GitHub, NumPy, Scikit-learn, Pandas, SQLite, Spark/AWS (learning)
- **Languages:** English (native), Cantonese (fluent), Mandarin (conversational)

Education

M.A.Sc., Electrical Engineering 2017-2020
University of Toronto Toronto, Ontario, Canada

- Thesis: *Weakly-Supervised Semantic Segmentation in the Multi-Class Setting across Different Image Domains* (co-supervised by Konstantinos Plataniotis & Parham Aarabi)
- Courses: Foundations of Computer Vision (CSC2503H), Random Processes (ECE537H1), Signal Processing (ECE1512H), Convex Optimization (ECE1505H), Object Modelling and Recognition (CSC2523H)

B.A.Sc., Electrical Engineering (GPA 3.64 / 4.0, 17th of 129) 2012-2017
University of Toronto Toronto, Ontario, Canada

- Areas: "Control, Communications & Signal Processing", "Analog & Digital Electronics", "Software"
- Capstone: *DARI: Depth-variable Augmented Reality Interface* (won Gordon Slemon Design Award)

Publications

Journal Papers

1. **L. Chan**, M. S. Hosseini, K. N. Plataniotis, "A Comprehensive Analysis of Weakly-Supervised Semantic Segmentation in Different Image Domains," in *International Journal of Computer Vision (IJCV)*, 2020. (pre-print) (code)
2. M. S. Hosseini, Y. Zhang, **L. Chan**, J. A. Brawley-Hayes, and S. Damaskinos, "Focus Quality Assessment of High-Throughput Whole Slide Imaging in Digital Pathology," in *IEEE Transactions on Medical Imaging (TMI)*, 2019. (paper) (code)

Conference Papers

1. M. S. Hosseini, **L. Chan**, W. Huang, Y. Wang, D. Hasan, C. Rowsell, K. N. Plataniotis, and S. Damaskinos, "Can Histology Knowledge be Transferred for Histopathology Analysis?," in Proceedings of the *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020. (submitted)
2. **L. Chan**, M. S. Hosseini, C. Rowsell, K. N. Plataniotis, and S. Damaskinos, "HistoSegNet: Semantic Segmentation of Histological Tissue Type in Whole Slide Images," in *International Conference on Computer Vision (ICCV)*, October 2019, pp. 10662-10671. (paper) (code)
3. M. S. Hosseini, **L. Chan**, G. Tse, M. Tang, J. Deng, S. Norouzi, C. Rowsell, K. N. Plataniotis, and S. Damaskinos, "Atlas of Digital Pathology: A Generalized Hierarchical Histological Tissue Type-Annotated Database for Deep Learning," in Proceedings of the *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, June 2019, pp. 11747–11756. (paper) (website)

Research Experience

Master's Student Research Assistant Sep 2017-present
University of Toronto (Multimedia Lab) Toronto, Ontario, Canada

- Developed novel semantic segmentation algorithm, compiled image dataset for computational pathology tool with Huron Digital Pathology, served as student reviewer for CVPR 2020
- Advised development of anomaly detection tool for industrial images with LG Science Park
- Compiled mathematical study of backpropagation in neural networks

Undergraduate Student Research Assistant May 2017-Aug 2017
University of Toronto (Multimedia Lab) Toronto, Ontario, Canada

- Designed novel image classification network with fixed maximally-polynomial kernels, optimized for efficient training on limited pathology images

Interim Engineering Intern May 2015-Aug 2016
Qualcomm Canada Markham, Ontario, Canada

- Built unit/functional test frameworks for optical flow, cadence detection, image sharpening, compression
- Operated image quality assessment and camera calibration lab, competed in two internal hackathons

Undergraduate Visiting Research Intern Jun 2014-Aug 2014
Hong Kong University of Science and Technology (Human Language Technology Centre)
Clear Water Bay, Hong Kong

- Performed unsupervised clustering of user personalities by country from OkCupid
- Predicted song popularity from social media mentions on Sina Weibo

Teaching Experience

ECE1512: Digital Image Processing and Applications (Head TA) Sep 2019-Dec 2019
University of Toronto Toronto, Ontario, Canada

- Designed and marked assignments and final project for graduate-level course on CNN classification, XAI

ECE462: Multimedia Systems (Head Lab TA) Jan.-Apr. 2018
University of Toronto Toronto, Ontario, Canada

- Designed and marked lab assignments and quizes for undergraduate-level course on image processing and compression, was awarded ECE Student Club Teaching Assistant Award