HENRY Z. LO

LinkedIn: https://www.linkedin.com/in/henry-z-lo-6a11461b

PROFILE

- Machine learning and neural network specialist with deep understanding of convolutional networks.
- Applied machine learning on a wide variety of projects such as object detection from satellite imagery, cancer subtype discovery, customer analysis, finding adverse drug reaction patterns.
- Experience dealing with difficult data, including time-series, images, text and noisy data.
- 6+ years of programming using Python, R, Java, PHP; full-stack web developer.

EDUCATION

University of Massachusetts Boston

Ph.D. in Machine Learning / Data Mining *June 2016*

B.S. in Computer Science / Psychology *June 2011*

Dissertation: Deep Networks: Applications, Interpretability, and Optimization

Undergraduate awards: McNair Fellow, Honors Program

Graduate awards: Sanofi Genzyme Fellowship, Randall G. Malbone Scholarship, NSF EAPSI Fellowship

MACHINE LEARNING PROJECTS

Crater Detection

Crater Detection via Convolutional Neural Networks, LPSC 2016

- Goal: classify craters from noisy 12×12 images with little labeled data.
- Improved 3.37% points of F1 in existing methods by optimizing filters.
- Achieved state-of-the-art performance over existing methods by 7.52% (0.918 vs. 0.855 F1) using Inception-based convolutional neural networks.

Interpreting and Optimizing Deep Learning

Scale Normalization, ICLR Workshop 2016

Randomout: Using Convolutional Gradient Norm to win the Filter Lottery, ICLR Workshop 2016

Convolutional Gradients for Feature Extraction and Analysis from Deep Neural Networks, FG 2015

- Goal: to understand and improve the learning speed of deep learning classifiers.
- Showed that normalizing scale and / or determinants during early learning reduces loss faster, explaining effects of many training algorithms.
- Used localized random-restart method to consistently learn better features in CNNs.
- Developed prediction gradient method to investigate the internal representations of a convolutional neural network to identify useful features.

Adverse Drug Reaction Detection

Temporality and Context for Detecting ADRs from Longitudinal Data, Applied Intelligence 2014

- Goal: mine drug usage and side effect patterns from OSIM longitudinal patient data.
- Achieved higher AUC by comparing conditional rates of side effect occurrences across multiple datasets.
- Work done at MITRE as intern at MITRE corporation in summer 2013.

WORK EXPERIENCE

AgileQR / 121Nexus *2012-2014*
Data Science Specialist

- Developed best practices to improve user engagement for clients from comparative behavior analysis of over 8 million users over 2 years (Catscan platform).
- Architected module for mining patterns of voter political positions and demographics for 121constituency campaign management platform in the 2012 election.
- Full-stack web developer in multiple frameworks / languages (Codeigniter, Laravel, Rails).

Other *2012-2015*
Data Science / Web Development Consultant

- **Janys Analytics**: Summarized the social media presence of the solar energy industry using NLP to analyze interest over time in Twitter (R). Backend development (Python).
- **Wise Systems**, **Comm. Ave Associates**, **Imperial Consulting**: Full-stack developer.
- **Institute for Reproducible Research**: Co-founder, host of `academictorrents.com`, a platform for disseminating research data and papers. Create `torrentify`, a web-based torrent maker.
- **MITRE**: Interned in summer 2013, mining potential adverse drug reactions (ADR) from patient data.

SKILLS

Neural Networks	Convolutional neural networks, word2vec, optimization, interpretability.
Unsupervised Learning	Matrix factorization-based models for general purpose mining.
Technology	Theano, (Py)Caffe. Numpy / scipy / jupyter.
Data Analysis	R for exploratory analysis and visualization (ggplot2).

PUBLICATIONS

- Scale Normalization*, ICLR Workshops 2016.
- RandomOut: Using a convolutional gradient norm to win The Filter Lottery, ICLR Workshops 2016.
- Convolutional Gradients for Feature Extraction and Analysis from Deep Neural Networks*, FG 2015.
- Bipart: Learning Block Structure for Activity Detection, TKDE 2014.
- Mining Adverse Drug Reactions from Electronic Health*, ICDM Workshops 2013.
- Academic Torrents: A Community-Maintained Distributed Repository*, XSEDE 2014.
- Effectiveness of Cybersecurity Competitions, SAM 2012.
- Several Remarks on Mining Frequent Trajectories in Graphs*, IEA/AIE 2012.

OTHER

Education

- Taught *Introduction to Computer Concepts*, *Advanced Data Structures / Algorithms*, original material.
- Created and maintained dedicated lab GPU servers for caffe / theano / mxnet (using docker).
- Organized and gave lectures on topics such as neural nets, security and web development independently and for UMass Boston Women in Science club. Taught Arduino to teachers at MassCUE 2010.
- Competed and trained students for MITCTF, NECCDC cybersecurity and BOSPRE competitions.

Service

- Reviewed papers for ICDM, KDD, SIGSPATIAL, ECML/PKDD, PAKDD, AAAI, NIPS and others.
- Helped organize workshops for the International Conference on Data Mining (ICDM) in 2013.

*Mark indicates first authorship