William L Hamilton

https://stanford.edu/~wleif,https://github.com/williamleif
37 Angell Ct., Apt 301, Stanford, CA, 94305, USA
wleif@stanford.edu, 1-650-391-6331

Relevant Experience

Graduate Student Researcher, *Stanford Network Analysis and NLP Groups* *spring 2015-present*

- Work jointly with Prof. Jure Leskovec and Prof. Dan Jurafsky.
- Combine natural language processing, network analysis, and deep learning to model heterogeneous social data (e.g., text + social networks).
- Act as project lead, mentoring two research assistants and one junior PhD student.

Head Teaching Assistant, *Stanford University, CS 224W* *fall 2016*

- Managed TAs and designed assignments for 200+ student course on *Social and Information Networks.*

Research Scientist Intern, *Amazon Inc.* *summer 2014*

- Worked on demand forecasting in the Amazon Web Services (AWS) division.
- Implemented a novel framework to predict customer demand for various AWS cloud services and performed large-scale econometric/statistical analyses.

Software Development Engineer Intern, *Amazon Inc.* *summer 2013*

- Worked on capacity management/planning for Amazon Web Services (AWS) division.
- Designed, implemented, and tested a robust and scalable distributed time-series prediction framework.

Research Assistant, *McGill Reasoning and Learning Lab* *summer 2012 - spring 2014*

- Worked with Prof. Joelle Pineau on reinforcement learning and time series prediction.

Education

PhD in Computer Science — GPA 4.00/4.00 *Expected Graduation: 2018*
Stanford University, Stanford, CA, USA

MSc in Computer Science (joint with B.Sc.) — GPA 4.00/4.00 *Graduated: October 2014*
BSc in Computer Science — GPA 3.96/4.00 *Graduated: May 2013*
McGill University, Montreal, QC, Canada

Peer-Reviewed Publications

- W.L. Hamilton*, J. Zhang*, C. Danescu-Niculescu-Mizil, D. Jurafsky, and J. Leskovec. Loyalty in Online Communities. *AAAI International Conference on Web and Social Media (ICWSM)*. 2017. (* equal contributions).
- W.L. Hamilton*, J. Zhang*, C. Danescu-Niculescu-Mizil, D. Jurafsky, and J. Leskovec. Loyalty in Online Communities. *AAAI International Conference on Web and Social Media (ICWSM)*. 2017. (* equal contributions).
- W.L. Hamilton, K. Clark, J. Leskovec, and D. Jurafsky. Inducing Domain-Specific Sentiment Lexicons from Unlabeled Corpora. *Empirical Methods in Natural Language Processing (EMNLP)*. 2016.
- W.L. Hamilton, J. Leskovec, and D. Jurafsky. Cultural Shift or Linguistic Drift? Comparing Two Computational Measures of Semantic Change. (Short paper). *Empirical Methods in Natural Language Processing (EMNLP)*. 2016.
- W.L. Hamilton, J. Leskovec, and D. Jurafsky. Diachronic Word Embeddings Reveal Statistical Laws of Semantic Change. *Association for Computational Linguistics (ACL)*. 2016.
- V. Prabhakaran, W.L. Hamilton, D. McFarland, D. Jurafsky. Predicting the Rise and Fall of Scientific Topics from Trends in their Rhetorical Framing. *Association for Computational Linguistics (ACL)*. 2016.

- W.L. Hamilton. Compressed Predictive State Representation. Master's Thesis, *McGill University*. (**Canadian AI MSc Thesis Award)**. 2014.
- W.L. Hamilton, M.M. Fard, and J. Pineau. Efficient Learning and Planning with Compressed Predictive States. *Journal of Machine Learning Research*. 2014.
- B. Balle*, W.L. Hamilton*, and J. Pineau. Methods of Moments for Learning Stochastic Languages: Unified Presentation and Empirical Comparison. *International Conference on Machine Learning (ICML)*. 2014. (* equal contributions).
- W.L. Hamilton, M.M. Fard, J. Pineau. Modelling Sparse Dynamical Systems with Compressed Predictive State Representations. *International Conference on Machine Learning (ICML)*. 2013.

Programming and Data Management Experience

- Programming experience: Java, C(++), Python/Cython, R, JavaScript, MATLAB, Perl, Common Lisp
- Extensive experience with machine learning frameworks: TensorFlow, scikit-learn, WEKA
- Data management experience: SQL (MySQL), Hadoop/MadReduce, NoSQL (MongoDB), Pandas
- Example large-scale, data intensive projects:
  - Ongoing project analyzing 7 full years of reddit.com activity (2008-2015, ∼2 billion user comments, ∼100 million posts) using Hadoop and optimized, Cython implementations of NLP and network analysis algorithms.
  - Developed a Java-based distributed time series prediction framework for Amazon Web Services, capable of predicting changes in millions of interdependent time series with real-time data integration using a distributed NoSQL framework.

Open Source Projects

HistWords, `https://github.com/williamleif/histwords`

- Tools and data for learning dynamic word vector embeddings.

SocialSent, `https://github.com/williamleif/socialsent`

- Suite of algorithms for inducing domain-specific sentiment lexicons from seed words and unlabeled data.

Reviewing Activities

Neural Information Processing Systems (NIPS)

International Conference on Machine Learning (ICML)

Association for Computational Linguistics (ACL)

Transactions of the Association for Computational Linguistics (TACL)

Journal of Complex Networks

PLoS One

AAAI International Conference on the Web and Social Media (ICWSM)

Selected Awards

SAP Stanford Graduate Fellowship (tuition and expenses for PhD) *2014*
Stanford University

Alexander Graham Bell Graduate Scholarship (tuition and expenses for MSc, PhD stipend) *2013-2014*
Natural Sciences and Engineering Research Council of Canada (NSERC)

Undergraduate Researcher of the Year (Honorable Mention) *2013*
Computing Research Association of North America

JW McConnell Scholarship (tuition and expenses for BSc) *2009 - 2013*
McGill University

Undergraduate Science Research Award *2012*
Natural Sciences and Engineering Research Council of Canada (NSERC)