WILLIAM L HAMILTON

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EDUCATION

PhD in Computer Science *Expected Graduation: 2018*
Stanford University, Stanford, CA, USA
Advisors: Dan Jurafsky and Jure Leskovec
Thesis: Representation Learning Methods for Computational Social Science

MSc in Computer Science *Graduated: October 2014*
McGill University, Montreal, QC, Canada
Advisor: Joelle Pineau
Thesis: Compressed Predictive State Representation

BSc in Computer Science *Graduated: May 2013*
McGill University, Montreal, QC, Canada

RELEVANT INDUSTRY EXPERIENCE

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

- Worked on demand forecasting for Amazon Web Services (AWS).
- Implemented a novel framework for modeling customer demand.

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

- Worked on capacity management and planning for Amazon Web Services (AWS).
- Designed and implemented a distributed time-series prediction framework.

PUBLICATIONS

Peer-reviewed conferences

[1] S. Kumar, W. L. Hamilton, D. Jurafsky, and J. Leskovec. Community Interaction on Conflict on the Web. *The Web Conference (WWW)*. 2018.

[2] W. L. Hamilton*, R. Ying*, and J. Leskovec. Inductive Representation Learning on Large Graphs. *Neural Information Processing Systems (NIPS)*. 2017.

[3] 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.

[4] J. Zhang*, W. L. Hamilton*, C. Danescu-Niculescu-Mizil, D. Jurafsky, and J. Leskovec. Community Identity and User Engagement in a Multi-Community Landscape. *AAAI International Conference on Web and Social Media (ICWSM)*. 2017.

[5] 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.

[6] W. L. Hamilton, J. Leskovec, and D. Jurafsky. Cultural Shift or Linguistic Drift? Comparing Two Computational Measures of Semantic Change. *Empirical Methods in Natural Language Processing (EMNLP)*. 2016.

[7] W. L. Hamilton, J. Leskovec, and D. Jurafsky. Diachronic Word Embeddings Reveal Statistical Laws of Semantic Change. *Association for Computational Linguistics (ACL)*. 2016.

[8] V. Prabhakaran, W. L. Hamilton, D. McFarland, and D. Jurafsky. Predicting the Rise and Fall of Scientific Topics from Trends in their Rhetorical Framing. *Association for Computational Linguistics (ACL)*. 2016. See also: `https://science-surveyor.github.io/`

[9] 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.

[10] W. L. Hamilton, M.M. Fard, and J. Pineau. Modelling Sparse Dynamical Systems with Compressed Predictive State Representations. *International Conference on Machine Learning (ICML)*. 2013.

Journal articles

[11] W. L. Hamilton, R. Ying, and J. Leskovec. Representation Learning on Graphs: Methods and Applications. *IEEE Data Engineering Bulletin*. 2017.

[12] R. Voigt, N. P. Camp, V. Prabhakaran, W. L. Hamilton, R. C. Hetey, C. M. Griffiths, D. Jurgens, D. Jurafsky, and J. L. Eberhardt. Language from Police Body Camera Footage Shows Racial Disparities in Officer Respect. *Proceedings of the National Academy of Sciences (PNAS)*. 2017.

[13] W. L. Hamilton, M.M. Fard, and J. Pineau. Efficient Learning and Planning with Compressed Predictive States. *Journal of Machine Learning Research*. 2014.

Peer-reviewed workshops

[14] A. Wang, W. L Hamilton, and J. Leskovec. Learning Linguistic Descriptors of User Roles in Online Communities. *Empirical Methods in Natural Language Processing, Workshop on Computational Social Science (EMNLP NLP+CSS)*. 2016.

[15] W. L. Hamilton, J. Leskovec, and D. Jurafsky. Distributional Approaches to Diachronic Semantics (Extended Abstract). *Distributional Semantics and Linguistic Theory*. 2016.

[16] W. L. Hamilton, M.M. Fard, and J. Pineau. Efficient Learning and Planning with Compressed Predictive States (Extended Abstract). *Reinforcement Learning and Decision Making Workshop (RLDM)*. 2013.

Fellowships, Scholarships, and Grants

SAP Stanford Graduate Fellowship ($125,000) *2014-2018*
Stanford University and SAP SE Inc.

NSERC Doctoral Scholarship (PGS-D) ($60,000) *2014-2017*
Natural Sciences and Engineering Research Council of Canada (NSERC)

Alexander Graham Bell Graduate Scholarship (CGS-D) ($105,000, declined) *2014-2017*
Natural Sciences and Engineering Research Council of Canada (NSERC)

Alexander Graham Bell Graduate Scholarship (CGS-M) ($17,500) *2013-2014*
Natural Sciences and Engineering Research Council of Canada (NSERC)

JW McConnell Scholarship ($20,000) *2009 - 2013*
McGill University

Undergraduate Science Research Award ($4,500) *2012*
Natural Sciences and Engineering Research Council of Canada (NSERC)

Selected Awards

Outstanding Teaching Assistant Award (among top-5% of TAs) *2016*
Stanford Computer Science

Canadian AI Association MSc Thesis Award *2014*
Canadian AI Association (CAIAC)

Graduate Excellence Award *2013*
McGill University

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

Mathematical and Computational Sciences Research Award (2nd prize) *2012*
McGill University

Governor General's Academic Medal *2009*
High School: Aden Bowman Collegiate, Saskatoon, SK
Awarded by: The Chancellery of Honours, Government of Canada

Reviewing Activities

Association for Computational Linguistics (ACL)	*2016, 2017*
AAAI International Conference on the Web and Social Media (ICWSM)	*2016, 2017*
International Conference on Machine Learning (ICML)	*2014, 2015, 2016*
Neural Information Processing Systems (NIPS)	*2014, 2015*
Transactions of the Association for Computational Linguistics (TACL)	*2017*
Web Search and Data Mining (WSDM)	*2017*
Nature: Scientific Reports	*2017*
Journal of Complex Networks	*2017*
PLoS One	*2017*
Pragmatics and Cognition	*2017*
International Joint Conference on Natural Language Processing (IJCNLP)	*2017*
NIPS, Learning from Limited Labeled Data Workshop	*2017*
Association for Computational Linguistics, NLP and CSS Workshop	*2017*
Empirical Methods in Natural Language Processing, Social NLP Workshop	*2017*

Teaching and Mentoring

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

Guest Lecturer, *Stanford University* *fall 2016*
CS 331B, Representation Learning in Computer Vision

Research Assistant Supervisor, *Stanford University* *fall 2016-present*
Stanford Network Analysis Project

Internship Mentor, *Stanford University* *summer 2016*
Center for the Study of Language and Information

Volunteer Lecturer, *Stanford University* *summer 2015*
Stanford AI Lab Summer Outreach Program

Teaching Assistant, *McGill University* *winter 2014*
COMP 424, Introduction to Artificial Intelligence

Invited Talks

Representation Learning on Large Graphs with GraphSAGE — *December, 2017*
NIPS Highlights Workshop: Learn How to Code a Paper

Quantifying Language Change with Vector Embeddings — *August, 2017*
Centre for Language Evolution, University of Edinburgh

Negativity and Semantic Change — *August, 2017*
Alan Turing Institute, London

Modelling Language Change with Word Embeddings — *July, 2017*
UROP Seminar Series, Cambridge University

Encoding and Decoding Graphs with Neural Networks — *June, 2017*
Computational and Biological Learning Lab, Cambridge University

Inductive Representation Learning on Large Graphs — *June, 2017*
Reasoning and Learning Lab, McGill University

Negativity and Lexical Innovation — *June, 2017*
Dynamics of Lexical Innovation Workshop, LMU Munich

Negativity and Semantic Change — *June, 2017*
Institute for Natural Language Processing, University of Stuttgart

The Semantic Instability of Negative Language: Causes and Consequences — *April, 2017*
Semantics and Pragmatics Lecture Series, Stanford University

Compressed Predictive State Representation — *June, 2015*
The 28th Canadian AI Conference

Spectral Methods for Learning Latent Variable Models — *May, 2014*
Max Planck Institute for Intelligent Systems

Open Source Projects

GraphSAGE, `https://github.com/williamleif/GraphSAGE`

- TensorFlow package for representation learning on large, dynamic graphs.

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.