

Alona M. Fyshe

Curriculum vitae

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Department of Computer Science Department
University of Victoria
Victoria, BC

Education

- Ph.D., Machine Learning (2015)
Thesis: *Corpora and Cognition: The Semantic Composition of Adjectives and Nouns in the Human Brain*
Advisor: Tom Mitchell
Carnegie Mellon University, Pittsburgh, PA
- M.Sc., Computing Science (2006)
Thesis: *Term Generalization and Synonym Resolution for Biological Abstracts: Using the Gene Ontology for Subcellular Localization Prediction.*
Advisor: Duane Szafron
University of Alberta, Edmonton, AB
- B.Sc, Computing Science (2004)
University of Alberta, Edmonton, AB

Employment

- **Assistant Professor**, Dept. of Computer Science, University of Victoria, August 2015 - Present
- **Post Doc (Supervisor: Tom Mitchell)**, Pittsburgh, PA. March-July 2015
- **Software Engineer (Google)**, Pittsburgh, PA. 2007 - 2009

Publications

Alona Fyshe, Gustavo Sudre, Leila Wehbe, Nicole Rafidi and Tom M Mitchell. The Semantics of Adjective Noun Phrases in the Human Brain. *Under Review* <http://biorxiv.org/content/early/2016/11/25/089615>

Haoyan Xu, Brian Murphy, Alona Fyshe. BrainBench: A Brain-Image Test Suite for Distributional Semantic Models. *Empirical Methods for Natural Language Processing*, Austin, TX. 2016

Cole Peterson, Alona Fyshe. Poet Admits // Mute Cypher: Beam Search to find Mutually Enciphering Poetic Texts. *Empirical Methods for Natural Language Processing*, Austin, TX. 2016

Leila Wehbe, Alona Fyshe, Tom Mitchell. Language processing in the brain: Mapping neural activity to language meaning. *Human Language: from Genes and Brains to Behavior*, MIT Press (to appear)

- Brian Murphy, Leila Wehbe, Alona Fyshe. Decoding Language from the Brain. *Language, Cognition, and Computational Models*, Cambridge University Press (to appear)
- Alona Fyshe, Leila Wehbe, Partha Talukdar, Brian Murphy, Tom Mitchell. A Compositional and Interpretable Semantic Space. *The Conference of the North American Chapter of the Association for Computational Linguistics - Human Language Technologies (NAACL HLT 2015)*, Denver, Colorado. 2015
- Leila Wehbe, Brian Murphy, Partha Talukdar, Alona Fyshe, Aaditya Ramdas, Tom Mitchell. Simultaneously Uncovering the Patterns of Brain Regions Involved in Different Story Reading Subprocesses. *PLoS ONE* 9(11): e112575. 2014
- Alona Fyshe, Partha Pratim Talukdar, Brian Murphy and Tom M Mitchell. Interpretable Semantic Vectors from a Joint Model of Brain- and Text- Based Meaning. *The 52nd Annual Meeting of the Association for Computational Linguistics*, Baltimore, Maryland. 2014
- Evangelos E. Papalexakis, Alona Fyshe, Nicholas Sidiropoulos, Partha Pratim Talukdar, Tom Mitchell, Christos Faloutsos. Good-Enough Brain Model: Challenges, Algorithms and Discoveries in Multi-Subject Experiments. *ACM SIGKDD*, New York City, USA. 2014
- John J Grefenstette, Shawn T Brown, Roni Rosenfeld, Jay DePasse, Nathan TB Stone, Phillip C Cooley, William D Wheaton, Alona Fyshe, David D Galloway, Anuroop Sriram, Hasan Guclu, Thomas Abraham and Donald S Burke. FRED (a Framework for Reconstructing Epidemic Dynamics): an open-source software system for modeling infectious diseases and control strategies using census-based populations. *BMC public health*. 2013;13(1):940
- Michelle Shu and Alona Fyshe. Sparse Autoencoders for Word Decoding from Magnetoencephalography. *3rd NIPS Workshop on Machine Learning and Interpretation in NeuroImaging (MLINI)*, Lake Tahoe, Nevada. 2013.
- Alona Fyshe, Partha Talukdar, Brian Murphy and Tom Mitchell. Documents and Dependencies: an Exploration of Vector Space Models for Semantic Composition *International Conference on Computational Natural Language Learning (CoNLL 2013)*, Sofia, Bulgaria, 2013.
- Alona Fyshe, Gustavo Sudre, Leila Wehbe, Brian Murphy and Tom Mitchell. Decoding Word Semantics from Magnetoencephalography Time Series Transformations. *NIPS Workshop on Machine Learning and Interpretation in NeuroImaging (MLINI)*, Lake Tahoe, Nevada. 2012
- Gustavo Sudre, Dean Pomerleau, Mark Palatucci, Leila Wehbe, Alona Fyshe, Riitta Salmelin, Tom Mitchell. Tracking Neural Coding Of Perceptual And Semantic Features Of Concrete Nouns. *Neuroimage*, 62(1) 451-463, 2012
- Alona Fyshe, Emily Fox, David Dunson and Tom Mitchell. Hierarchical Latent Dictionaries for Models of Brain Activation. *Fifteenth International Conference on Artificial Intelligence and Statistics*, 2012
- Alona Fyshe, Yifeng Liu, Duane Szafron, Russ Greiner, and Paul Lu. Improving Subcellular Localization Prediction using Text Classification and the Gene Ontology. *Bioinformatics*, 24(21):2512-2517 2008
- Alona Fyshe and Duane Szafron. Term Generalization and Synonym Resolution for Biological Abstracts: Using the Gene Ontology for Subcellular Localization Prediction. *BioNLP Workshop at Human Language Technology conference - North American chapter of the Association for Computational Linguistics (HLT-NAACL)*, 2006
- Brett Poulin, Roman Eisner, Duane Szafron, Paul Lu, Russ Greiner, D.S. Wishart, Alona Fyshe, Brandon Percy, Cam MacDonell and John Anvik. Visual Explanation of Evidence in Additive Classifiers. *Eighteenth Conference on Innovative Applications of Artificial Intelligence (IAAI)*,

July 2006

Paul Lu, Duane Szafron, Russell Greiner, David S. Wishart, Alona Fyshe, Brandon Percy, Brett Poulin, Roman Eisner, Danny Ngo and Nicholas Lamb. PA-GOSUB: a searchable database of model organism protein sequences with their predicted Gene Ontology molecular function and subcellular localization. *Nucleic Acids Research*, 33:D147-D153, 2005

Duane Szafron, Paul Lu, Russell Greiner, David S. Wishart, Brett Poulin, Roman Eisner, Zhiyong Lu, John Anvik, Cam Macdonell, Alona Fyshe, and David Meeuwis. Proteome Analyst: Custom Predictions with Explanations in a Web-based Tool for High-throughput Proteome Annotations. *Nucleic Acids Research*, 32:W365-W371 2005

Nicholas Lamb, Paul Lu, and Alona Fyshe. Trellis Driver: Distributing a Java Workflow Across a Network of Workstations. *The 6th International Workshop on High Performance Scientific and Engineering Computing (HPSEC)*, 2004

Grants

Name	Value	Period Held
NSERC Engage	\$25,000	2016
CIFAR Global Scholar	\$100,000	2016-2018
NSERC Discovery	\$110,000	2016-2021
Internal Research Grant	\$7,000	2015

Awards

Name	Value	Period Held
Multimodal Neuroimaging Training Program Fellowship	\$22,032	2013-2014
Rothberg Research Award in Human Brain Imaging	\$2,500	2011
Post-Graduate Scholarship (Doctoral) (NSERC)	\$21,000 x 2	2010 & 2011
Gordon M. MacNabb Scholarship	\$5,000	2005-2006
Canadian Graduate Scholarship (NSERC)	\$17,500 x 2	2005 & 2006
iCORE Graduate Student Scholarship	\$12,000 x 2	2005 & 2006
Walter H Johns Graduate Fellowship	\$4,622 x 2	2005 & 2006
University of Alberta Undergraduate Scholarship	\$1,250	2003-2004
Jason Lang Scholarship	\$1,000 x 2	2002-2004
Isabel Munroe Smith Memorial Scholarship	\$500	2003-2004
Barry J. Mailloux Prize in Computing Science	\$1,750	2002-2003

Speaking Engagements

- Panel Moderator: Women in Tech. Fundica Road Show, April 2016
- Invited Talk: Brains Make it Better, Engineering Faculty Meeting, University of Victoria, April 2016
- Invited talk: What Does Language Look Like in the Brain? Engineering Institute of Canada Canadian Society for Senior Engineers (EIC CSSE), April 2016

- Invited talk: “Corpora, Cognition and Composition: Exploring Semantics in the Human Brain”, Johns Hopkins University, University of Maryland, February 2016
- Invited talk: Watching the Brain Read Discover Techtoria, Victoria
- Invited talk: The Semantics of Phrases and Sentences in the Human Brain. *University of British Columbia, Vancouver, Canada.* September 2014
- Invited talk: Decoding semantics from phrases and sentences using magnetoencephalography. *Biomag, Halifax, Canada* August 2014

Conference Presentations

- Semantic Representations from a Joint Model of Brain and Text Based Meaning *Society for the Neurobiology of Language, San Diego, USA* November, 2013
- Documents and Dependencies: an Exploration of Vector Space Models for Semantic Composition *International Conference on Computational Natural Language Learning (CoNLL 2013)*, Sofia, Bulgaria, 2013.
- Hierarchical Latent Dictionaries for Models of Brain Activation. *Fifteenth International Conference on Artificial Intelligence and Statistics*, 2012
- Term generalization and synonym resolution for biological abstracts: using the Gene Ontology as a source of expert knowledge. *BioNLP Workshop, HLT-NAACL* 2006.

Conference Posters

- Alona Fyshe, Erika Laing, Nicole Rafidi, Kai-Min Chang and Tom Mitchell. Decoding the semantics of words in sentences from neural activity, *The 27th Annual CUNY Conference on Human Sentence Processing* , 2014
- Alona Fyshe et al. Decoding Word Semantics from MEG Time Series Transformations *Statistical Analysis of Neural Data (SAND)*, 2012
- Alona Fyshe et al. Decoding words from the coordination of brain activity, *Society for Neuroscience*, 2011
- Alona Fyshe et al. Gene Ontology Molecular Function and Subcellular Localization Predictions for Model Organisms, *Intelligent Systems for Molecular Biology* 2005
- Alona Fyshe et al. Proteome Analyst Overview, *PENCE AGM* 2004

Teaching

- **University of Victoria** Victoria, BC, Canada
 - Spring 2017, *CSC 106: The Practice of Computer Science*
 - Fall 2016, *SENG 474 / CSC 578D: Data Mining*

- Spring 2016, *SENG 474 / CSC 578D: Data Mining*
- Fall 2015, *CSC 106: The Practice of Computer Science*
- **Multimodal Neuroimaging Training Program (CNBC)** Pittsburgh, PA, USA
 - July 2014, *Machine Learning Tutorial*
- **Carnegie Mellon University** Pittsburgh, PA, USA
 - Spring 2012, *Machine Learning with Large Datasets*
 - Fall 2011, *Machine Learning with Large Datasets* (Course Development)
 - Fall 2007, Co-Lecturer, Teaching Assistant, *Internet Search Technologies*
- **University of Alberta** Edmonton, AB, Canada
 - Fall 2006, Teaching Assistant, *Introduction to Computing Science*
 - Fall 2005, Teaching Assistant, *Introduction to Computing Science*

Service to Profession

- **Reviewer** Public Library of Science
- **Reviewer** Association for the Advancement of Artificial Intelligence
- **Reviewer** International Conference on Machine Learning
- **Reviewer** Neural Information Processing Systems
- **Reviewer** Association for Computational Linguistics
- **Reviewer** European Chapter of the Association for Computational Linguistics
- **Reviewer** North American Association for Computational Linguistics
- **Reviewer** Empirical Methods in Natural Language Processing

University Service

- **Committee Member**, SENG Curriculum Committee, University of Victoria
- **Committee Member**, Center for the Neural Basis of Cognition (CNBC) Colloquium Series Committee (2013-2014 series)
 - Organized nominations, voting and hosting of speakers for the 2013-2014 CNBC Colloquium Series
- **Committee Member**, Speaking Skills Committee, Machine Learning Department, Carnegie Mellon University (2012-2014)

- Gave feedback on student presentations as part of the Machine Learning Journal Club

- **Committee Member**, Carnegie Mellon Admissions Committee (2011 & 2012)
- **President**, Computing Science Graduate Student's Association (CSGSA), University of Alberta (2005-2006)
- **Founder**, Computing Science Mentoring Program, University of Alberta (2005-2006)

Community Service

- **Co-organizer**, Introduce a Girl to Engineering day, March 6, 2008
- **Keynote Speaker**, WIT (Women in Technology) Conference (2006)