

# L. Amber Wilcox-O’Hearn

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A computer scientist with experience in natural language processing, machine learning, and agile development.

Research interests: properties that emerge from the way information is structured. For example, formal languages vary in robustness to error, potential for ambiguity, expressiveness, and susceptibility to inference. Natural languages are likely to have similar levels of these properties, but to achieve them through different structural means.

*computational linguistics, machine learning, cognitive neuroscience, psycholinguistics, information theory*

## Education

- **Hacker School** New York, NY, June–August, 2014  
Three month self-directed learning program to improve programming skills of all kinds.  
Projects included:
  - Topic Modelling with Latent Dirichlet Allocation: Explores implementing a form of Gibbs sampling with a lower space requirement.
  - **Protagonist: a tag system**: Organises files with non-hierarchical tags.
  - **Factor Études**: In which I attempt classical LISP problems in a stack-based language.
- **University of Toronto**, Toronto, ON  
M.Sc., **Computer Science** (Computational Linguistics), June 2014
  - Thesis Topic: Trigram-based noisy channel models of real-word spelling and grammatical correction.
  - Project **Malaprop**:
    - Reimplemented prior research in contextual spelling correction to improve evaluation measurements and replicability.
    - Substituted original method with the more appropriate hidden Markov model.
    - Contributed software to generate corpora containing real-word errors for future experimental comparisons.
- **Saint Mary’s University**, Halifax, NS  
B.Sc., **Mathematics and Computing Science**, June 2002  
Honours Thesis Topic: Error-Detecting Properties of Natural Language
- **University of Waterloo**: Waterloo, ON  
B.A., **Germanic and Slavic Studies**, June 1997  
Russian Honours, Dean’s Honours List

## Programming Languages

**Proficient:** Python, C, bash

**Familiar:** C++, Java, Haskell, Factor, Scheme, Postscript, Pig

## Natural Languages

**Native:** English

**Proficient:** Russian, French

**Limited:** German, American Sign Language, Spanish

## Teaching and Community

**Summit Middle School**, Boulder, CO

Mentor, Computer Programming Club

Since January 2014

**University of Colorado, Boulder**, Boulder, CO

Tutor, Natural Language Processing

September 2013 to January 2014

**Mesa Elementary School**, Boulder, CO

Coach, Math Olympiad Team

Since September 2011

**University of Toronto** Toronto, ON

Co-Leader, Women in Technology Program  
for Elementary School Girls

September 2003 to June 2004

## Academic Awards

Natural Sciences and Engineering Research Council of Canada

- [Postgraduate Scholarship](#), 2002 - 2003
- [Undergraduate Student Research Award](#), Summer 2000

University of Waterloo,

- [Dean's Honours List](#), June 1997
- [Russian Book Prize](#), June 1995

## Peer-reviewed Publications

### ▪ Spelling and Grammatical Correction

- **L. Amber Wilcox-O'Hearn.** [A Noisy Channel Model Framework for Grammatical Correction](#)  
*CoNLL-2013*, 109
- **L. Amber Wilcox-O'Hearn, Graeme Hirst and Alexander Budanitsky.** [Real-word spelling correction with trigrams: A reconsideration of the Mays, Damerau, and Mercer model.](#)  
*Proceedings, 9th International Conference on Intelligent Text Processing and Computational Linguistics (CICLing-2008)* pp. 605-616, February, Haifa

### ▪ Memory

- **Darryl Bruce, Kimberly Phillips-Grant, L. Amber Wilcox-O'Hearn, John A. Robinson, Lori Francis.** [Memory fragments as components of autobiographical knowledge.](#)  
*Applied Cognitive Psychology*, Volume 21 Issue 3 (2006), Pages 307 - 324
- **Darryl Bruce, L. Amber Wilcox-O'Hearn, John A. Robinson, Kimberly Phillips-Grant, Lori Francis, and Marilyn C. Smith.** [Fragment memories mark the end of childhood amnesia.](#)  
*Memory and Cognition* 2005 33:567-576

### ▪ Coding Theory

- **Stravros Konstantinidis, Steven Perron, and L. Amber Wilcox-O'Hearn.** [On a Simple Method for Detecting Synchronization Errors in Coded Messages.](#)  
*IEEE Transactions on Information Theory*, v49 (May 2003) 1355-1363.
- **Stavros Konstantinidis and Amber O'Hearn.** [Error-Detecting Properties of Languages.](#)  
*Theoretical Computer Science*, v276 (2002) 355-375.