

L. Amber O’Hearn

Research interests: philosophy of science, language, linguistics, and mind; 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; metaethics

Education

- **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
- **The Recurse Center** 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.

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

Programming Languages

Proficient: Python, C, bash

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

Natural Languages

Native: English

Proficient (if rusty): Russian, French

Limited: German, American Sign Language, Spanish

Employment

- **Return Path** Broomfield, CO, May 2015–May 2017
Applied a breadth of knowledge from natural language processing, string-based algorithms, and machine learning to design or augment existing analysis of email data and metadata. For example:
 - Designed an evaluation system providing a deeper understanding of the strengths and weaknesses of our email anonymisation methods
 - Improved the effectiveness of privacy-preserving techniques on user data, halving company risk
 - Designed and implemented efficient anomaly detection methods for understanding email subscription behaviour
 - Built text classification systems on email message data, leveraging structure and content
 - Created clean, anonymised data sets for use by an external analytics research group
 - Participated in workplace culture by giving educational talks, leading and joining Hackathon projects, and involvement in technical and social committees.
- **Well Actually** June 2017–present
Free-lance author of a book, blogs, and scientific research on diet and health.
 - Independently acquired state-of-the-art knowledge in nutrition, evolutionary biology, physiology.
 - Published peer-reviewed papers in relevant journals.
 - Regularly give oral presentations at medical and health conferences.
 - Organised a conference for international speakers and audience

Teaching and Community

Summit Middle School, Boulder, CO

Mentor, Computer Programming Club

January 2014 to May 2015

University of Colorado, Boulder, Boulder, CO

Tutor, Natural Language Processing

September 2013 to January 2014

Mesa Elementary School, Boulder, CO

Coach, Math Olympiad Team

September 2011 to May 2015

University of Toronto Toronto, ON

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

September 2003 to June 2004

Peer-reviewed Publications

- **Computational Linguistics**
 - **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
- **Psychology of 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
- **Information 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.
- **Evolution and Health**
 - **Amber O'Hearn.** [Can a carnivore diet provide all essential nutrients?](#) *Curr Opin Endocrinol Diabetes Obes.*, Volume 27 Issue 5 (2020).
 - **L. Amber O'Hearn.** [My Case Against Uricase: a critical examination of hypotheses.](#) *Journal of Evolution and Health*, v4 (2019).
 - **L. Amber O'Hearn.** [Evidence on chronic ketosis in traditional Arctic populations.](#) *Journal of Evolution and Health*, v3 (2019).
 - **L. Amber O'Hearn.** [Ketogenic Diets, Caloric Restriction, and Hormones.](#) *Journal of Evolution and Health*, v2 (2018).