

# Adam Lopez

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## Research

The biggest barrier to global communication is the fact that we speak many different languages. My research focuses on technology that will break this barrier, in particular systems that learn how to translate from vast amounts of data (like Google Translate). Improvements to these systems depend on the extension and application of fundamental ideas from diverse fields such as algorithms, machine learning, formal language and automata theory, and computational linguistics. I am interested in variety of problems in these and related fields.

## Papers & talks

### Journal Articles

- 2010 A. Arun, B. Haddow, P. Koehn, A. Lopez, P. Blunsom, and C. Dyer. Monte Carlo techniques for phrase-based translation. In *Machine Translation*, 24(2).
- 2008 A. Lopez. Statistical machine translation. In *ACM Computing Surveys* 40(3), Article 8: 1–49.

### Refereed Conference Papers

- 2011 M. Auli and A. Lopez. Training a Log-Linear Parser with Loss Functions via Softmax-Margin. In *Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP)*.  
**Notable student paper award, presented in plenary session (<2% of submissions).**
- M. Auli and A. Lopez. A comparison of loopy belief propagation and dual decomposition for integrated CCG supertagging and parsing. In *Proceedings of the Association for Computational Linguistics (ACL)*.
- M. Auli and A. Lopez. Efficient CCG parsing: A\* versus adaptive supertagging. In *Proceedings of the Association for Computational Linguistics (ACL)*.
- 2009 A. Lopez. Translation as weighted deduction. In *Proceedings of the European Association for Computational Linguistics (EACL)*.
- A. Arun, C. Dyer, B. Haddow, P. Blunsom, A. Lopez, and P. Koehn. Monte Carlo inference and maximization for phrase-based translation. In *Proceedings of the Conference on Natural Language Learning (CoNLL)*.
- 2008 A. Lopez. Tera-scale translation models via pattern matching. In *Proceedings of the International Conference on Computational Linguistics (COLING)*.
- 2007 A. Lopez. Hierarchical phrase-based translation with suffix arrays. In *Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP)*.
- 2006 A. Lopez and P. Resnik. Word-based alignment, phrase-based translation: What's the link? In *Proceedings of the Association for Machine Translation in the Americas (AMTA)*.

- 2005 D. Chiang, A. Lopez, N. Madnani, C. Monz, P. Resnik, and M. Subotin. The Hiero machine translation system: extensions, evaluation, and analysis. In *Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP)*.

### Refereed Workshop & Demonstration Papers

- 2012 A. Lopez. Putting Human Assessments of Machine Translation Systems in Order. In *Proceedings of the Seventh Workshop on Statistical Machine Translation*.
- J. Weese, C. Callison-Burch, and A. Lopez. Using Categorical Grammar to Label Translation Rules. In *Proceedings of the Seventh Workshop on Statistical Machine Translation*.
- 2011 J. Weese, J. Ganitkevitch, C. Callison-Burch, M. Post, and A. Lopez. Joshua 3.0: Syntax-based Machine Translation with the Thrax Grammar Extractor. In *Proceedings of the Sixth Workshop on Statistical Machine Translation*.
- 2010 C. Dyer, A. Lopez, J. Ganitkevitch, J. Weese, F. Ture, P. Blunsom, H. Setiawan, V. Eidelman, and P. Resnik. cdec: A Decoder, Alignment, and Learning Framework for Finite-State and Context-Free Translation Models. In *Proceedings of the Association for Computational Linguistics (ACL) Demonstration Track*.
- 2009 M. Auli, A. Lopez, H. Hoang, and P. Koehn. A systematic analysis of translation model search spaces. In *Proceedings of the Workshop on Machine Translation (WMT)*.
- H. Hoang, P. Koehn, and A. Lopez. A unified framework for phrase-based, hierarchical, and syntax-based statistical machine translation. In *Proceedings of the International Workshop on Spoken Language Translation (IWSLT)*.
- 2005 A. Lopez and P. Resnik. Improved HMM alignment models for languages with scarce resources. In *Proceedings of the Workshop on Building and Using Parallel Texts*.
- A. Lopez and P. Resnik. Pattern visualization for machine translation output. In *Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP) Demonstration Session*.
- 2002 A. Lopez, M. Nossal, R. Hwa, and P. Resnik. Word-level alignment for multilingual resource acquisition. In *Proceedings of the Workshop on Linguistic Knowledge Acquisition and Representation-Bootstrapping Annotated Language Data*.

### Invited talks

- 2012 IBM Research, hosted by Yaser Al-Onaizan.
- 2010 Johns Hopkins Human Language Technology Center of Excellence, hosted by Mark Dredze.
- 2009 Oxford University Computing Lab, hosted by Phil Blunsom.
- Cambridge University Computing Lab, hosted by Stephen Clark.
- Saarland University Department of Computational Linguistics, hosted by Andreas Eisele.
- Dublin City University Center for Next Generation Language Technology, hosted by Andy Way.
- 2008 Second Machine Translation Marathon, workshop organized by Philipp Koehn.
- 2007 University of Amsterdam Institute for Logic Language and Computation, hosted by Khalil Sima'an.
- University of Edinburgh Department of Informatics, hosted by Philipp Koehn.
- University of Pittsburgh Natural Language Processing Lab, hosted by Wendy Chapman.
- Carnegie Mellon University Language Technologies Institute, hosted by Alon Lavie.
- Microsoft Research, hosted by Robert C. Moore.
- MITRE Corporation, hosted by Christy Doran.
- 2006 Colgate University Department of Computer Science, hosted by Jaime Spacco.

2005 Union College Department of Computer Science, hosted by Brian Postow.

## Teaching

### Academic Courses

2012 Machine Translation. Senior undergrad and graduate course at Johns Hopkins University. Co-taught with Chris Callison-Burch and Matt Post.  
2000 Computer Science II. Prince George's Community College.

### Invited Short Courses & Tutorial Lectures

2012 Statistical Machine Translation. One-week course at the North American Summer School in Logic, Language and Information (NASSLLI).  
2011 Discriminative Translation and Transducers. Tutorial lecture at the 2011 Johns Hopkins Summer School on Human Language Technology.  
2010 Statistical Machine Translation. One-week course at the European Summer School in Logic, Language and Information (ESSLLI).  
Introduction to Machine Translation. Tutorial lecture at the Fifth Machine Translation Marathon.  
Machine Translation. Tutorial lecture at the 2010 Johns Hopkins Summer School on Human Language Technology, with John DeNero.  
Introduction to Machine Translation. Tutorial lecture at the Fourth Machine Translation Marathon.  
2009 Machine Translation. Tutorial lecture at the 2009 Johns Hopkins Summer School on Human Language Technology, with John DeNero.  
Introduction to Machine Translation. Tutorial lecture at the Third Machine Translation Marathon.  
2008 Syntax-based Machine Translation. Tutorial lecture at the Second Machine Translation Marathon.

## Education

2008 PhD in Computer Science, University of Maryland. Supervised by Philip Resnik.  
2002 MS in Computer Science, University of Maryland.  
1997 BS in Computer Science, Duke University.

## Experience

### Academic Appointments

2012- Assistant research professor, Johns Hopkins Computer Science Department.  
2011-2012 Assistant research scientist, Johns Hopkins Computer Science Department.  
2010- Member of technical staff, Johns Hopkins Human Language Technology Center of Excellence.  
2010 Visiting scholar, Johns Hopkins Center for Language and Speech Processing.  
2008-2010 Research fellow, University of Edinburgh Department of Informatics.

### Other Research & Teaching Positions

2000-7 Graduate research assistant, University of Maryland. Supervised by Philip Resnik.  
2000 Research intern, Sun Microsystems Laboratories. Supervised by William A. Woods.  
2000 Visiting lecturer, Prince George's Community College Computer Science Department.

1999 Graduate teaching assistant, University of Maryland Computer Science Department.  
1994-96 Undergraduate teaching assistant, Duke University Computer Science Department.

### **Industrial Positions**

1997-99 Software engineer, IBM Corporation.

## Professional activities & service

### **Advising**

Jason R. Smith. Johns Hopkins University, PhD expected 2013. Co-supervised with Chris Callison-Burch.

Michael Auli. University of Edinburgh, PhD 2012 (defended May 9). Co-supervised with Philipp Koehn.

### **Student Committees**

Hieu Hoang. University of Edinburgh, PhD 2011. Dissertation committee.

Loïc Dugast. University of Edinburgh, PhD student 2007-2011. Dissertation committee.

Niyue Tan. University of Edinburgh, MPhil student 2008-2009. First-year committee.

### **Conference & workshop organization**

2012 Area chair, Association for Computational Linguistics (ACL).

2010 Co-chair, Fourth International Workshop On Crosslingual Information Access.

2009 Area chair, Empirical Methods in Natural Language Processing (EMNLP).

2006- Reviewer for ACL, COLING, CoNLL, EACL (best paper committee 2012), EMNLP, ESSLI, IJCAI, IJCNLP, MT Summit, NAACL, Natural Language Engineering, various workshops.

### **Professional Societies**

Association for Computing Machinery.

Association for Computational Linguistics.

## Personal

United States citizen.