Adam Lopez

Research Scientist
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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 fields and others.

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

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

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.

Tutorials & courses

2011 Discriminative Translation and Transducers. Tutorial lecture at the 2011 Johns Hopkins Sum-

mer 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

Research & Teaching Positions

2011- Assistant research scientist (courtesy appointment), Johns Hopkins University Computer Science Department.

2010- Research scientist (primary appointment), Johns Hopkins University Human Language Technology Center of Excellence.

2010 Senior scientist, Johns Hopkins Center for Language and Speech Processing summer workshop.

2008-2010 Research fellow, University of Edinburgh. Supervised by Philipp Koehn.

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

Matt Post. Johns Hopkins University, postdoctoral researcher, 2010-present. Co-supervisor (with Chris Callison-Burch and Benjamin van Durme).

Michael Auli. University of Edinburgh, PhD expected 2012. Co-supervisor (with Philipp Koehn).

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 (machine translation), Association for Computational Linguistics (ACL).
2010 Co-chair, Fourth International Workshop On Crosslingual Information Access.
2009 Area chair (machine translation), Empirical Methods in Natural Language Processing (EMNLP).
2006- Reviewer for ACL, COLING, CoNLL, EACL, EMNLP, ESSLLI, IJCAI, IJCNLP, MT Summit, NAACL, Natural Language Engineering, various workshops.

Professional Societies

Association for Computing Machinery.
Association for Computational Linguistics.

Personal

United States citizen.