

Michael Joseph Heilman

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Professional Experience

Educational Testing Service, Princeton, New Jersey

- Associate Research Scientist, NLP and Speech group, 2011-present

Education

Language Technologies Institute, Carnegie Mellon University, Pittsburgh, Pennsylvania

- Ph.D. in Language Technologies, 2007-2011
- Advisor: Noah A. Smith

Language Technologies Institute, Carnegie Mellon University, Pittsburgh, Pennsylvania

- M.S. in Language Technologies, 2005-2007
- Cumulative GPA: 3.97
- Advisor: Maxine Eskenazi

University of Notre Dame, Notre Dame, Indiana

- B.S., Computer Science, with Honors, 2001-2005
- B.A. in Japanese Language, with Honors, 2001-2005
- Cumulative GPA: 3.63

Fellowships

- Program in Interdisciplinary Education Research (<http://www.cmu.edu/pier>), 2007-2011
- National Science Foundation Graduate Research Fellowship, 2007-2010
- Siebel Scholar (<http://www.siebelscholars.com>), 2007

Awards and Honors

- Honorable Mention for Best Presentation (Tree Edit Models for Sentence Pair Tasks), Language Technologies Institute Student Research Symposium, 2009
- National Science Foundation Travel Grant (\$1,000) for participating in the Young Researcher's Track at the 9th International Conference on Intelligent Tutoring Systems, Montreal, Quebec, Canada, 2008
- Inducted into Tau Beta Pi, University of Notre Dame, 2005
- Inducted into Upsilon Pi Epsilon, University of Notre Dame, 2005
- Summer Language Grant (\$4,500) to study in Japan, University of Notre Dame, 2002

Languages

Computer Programming: Python, Java, Perl, C/C++, SQL, Javascript

Natural: English (native), Japanese (intermediate), Spanish (beginner), German (beginner)

Professional Service

- Reviewer, *Computational Linguistics*, 2010
- Reviewer, *ACM Transactions on Intelligent Systems and Technology*, 2010
- Reviewer, *Language Resources and Evaluation Journal*, 2010
- Program Committee Member, FLAIRS-24 Applied Natural Language Processing Track, 2010
- Program Committee Member, The 3rd Workshop on Question Generation, 2010
- Program Committee Member, The 2nd Workshop on Question Generation, 2009
- Organizer, Program for Interdisciplinary Education Research speaker series, 2008-2010

- Reviewer, First Annual Conference on Educational Data Mining, 2008
- Scientific Program Committee Member, Speech and Language Technology in Education (SLaTE), International Speech Communication Association Tutorial and Research Workshop, 2007
- Organizing Committee Member, Speech and Language Technology in Education (SLaTE), ISCA Tutorial and Research Workshop, 2007
- Co-organizer and presenter, CMU, Pitt, Pittsburgh Company Demo Session, 9th International Conference on Spoken Language Processing, 2006

Teaching Experience

Teaching Assistant, Grammars and Lexicons (11-721), fall 2009

- Course Instructors: Lori Levin and Teruko Mitamura
- Graded assignments, exams, and final projects. For this graduate-level course on linguistics for computer scientists

Teaching Assistant, Natural Language Processing (11-411), spring 2008

- Course Instructor: Noah A. Smith
- Presented 3 lectures on text classification, lexical semantics, and discourse processing
- Co-developed final project on question generation and answering for this undergraduate-level course

Undergraduate Mentoring

- Mentored Rishav Bhowmick, a student from CMU-Qatar participating in undergraduate research, 2009-2010
- Mentored Christine Feeney, an intern in the Pittsburgh Science of Learning Center Summer Internship program, 2007

Other Educational Experiences

Research Experience for Undergraduates, University of Notre Dame, 2005

- Worked under Dr. Matthias Scheutz on the natural language understanding components of a social robot, which was presented at the AAAI 2005 Robot Competition

Research Experience for Undergraduates, University of Notre Dame, summer 2004

- Part of SPANIDS project team under Dr. Lambert Schaelicke
- Designed and programmed hardware modules in Verilog

Princeton in Ishikawa, Kanazawa, Japan, summer 2003

- Participated in eight-week home-stay and intensive language training program

Hokkaido International Foundation, Hakodate, Japan, summer 2002

- Participated in eight-week home-stay and intensive language training program

University of Notre Dame London Program, London, England, fall 2003

Doctoral Dissertation

M. Heilman. 2011. Automatic Factual Question Generation from Text. Ph.D. Dissertation, Carnegie Mellon University. CMU-LTI-11-004.

Full-Length Publications in Refereed Conference Proceedings and Journals

D. Yogatama, M. Heilman, B. O'Connor, C. Dyer, B. R. Routledge, and N. A. Smith. 2010. Predicting a Scientific Community's Response to an Article. In Proc. of EMNLP.

M. Heilman and N. A. Smith. 2010. Tree Edit Models for Recognizing Textual Entailments, Paraphrases, and Answers to Questions. In Proc. of NAACL/HLT.

- M. Heilman and N. A. Smith. 2010. Good Question! Statistical Ranking for Question Generation. In Proc. of NAACL/HLT.
- M. Heilman, K. Collins-Thompson, M. Eskenazi, A. Juffs, L. Wilson. 2010. Personalization of Reading Passages Improves Vocabulary Acquisition. *International Journal of Artificial Intelligence in Education*, Vol. 20 (1).
- A. Kulkarni, M. Heilman, M. Eskenazi, and J. Callan. 2008. Word Sense Disambiguation for Vocabulary Learning. In Proc. of the 9th international conference on Intelligent Tutoring Systems.
- M. Heilman, K. Collins-Thompson, J. Callan, and M. Eskenazi. 2007. Combining lexical and grammatical features to improve readability measures for first and second language texts. In Proc. NAACL-HLT.
- M. Heilman, K. Collins-Thompson, J. Callan, and M. Eskenazi. 2006. Classroom success of an intelligent tutoring system for lexical practice and reading comprehension. In Proc. of the 9th International Conference on Spoken Language Processing.

Publications in Refereed Workshop Proceedings, Short Papers, and Posters

- K. Gimpel, N. Schneider, B. O'Connor, D. Das, D. Mills, J. Eisenstein, M. Heilman, D. Yogatama, J. Flanigan, and N. A. Smith. 2011. Part-of-Speech Tagging for Twitter: Annotation, Features, and Experiments. In Proc. of ACL, companion volume.
- M. Heilman and N. A. Smith. 2010. Extracting Simplified Statements for Factual Question Generation. In Proc. of the 3rd Workshop on Question Generation.
- M. Heilman and N. A. Smith. 2010. Rating Computer-Generated Questions with Mechanical Turk. In Proc. of the NAACL/HLT workshop on Creating Speech and Language Data With Amazon's Mechanical Turk.
- M. Heilman and N. A. Smith. 2009. Ranking automatically generated questions as a shared task. In Proc. of the 2nd Workshop of Question Generation.
- N. A. Smith, M. Heilman, and R. Hwa. 2008. Question generation as a competitive undergraduate course project. In Proc. of the Workshop on the Question Generation Shared Task and Evaluation Challenge.
- M. Heilman and M. Eskenazi. 2008. Self-assessment in vocabulary tutoring. In Proc. of the Young Researcher's Track. 9th International Conference on Intelligent Tutoring Systems.
- C. Feeney and M. Heilman. 2008. Automatically generating and validating reading-check questions. In Proc. of the Young Researcher's Track. 9th International Conference on Intelligent Tutoring Systems.
- J. Pino, M. Heilman, and M. Eskenazi. 2008. A selection strategy to improve cloze question quality. In Proc. of the Workshop of Intelligent Tutoring Systems for Ill-Defined Domains. 9th International Conference on Intelligent Tutoring Systems.
- M. Heilman, K. Collins-Thompson, and M. Eskenazi. 2008. An analysis of statistical models and features for reading difficulty prediction. In Proc. of The 3rd Workshop on Innovative Use of NLP for Building Educational Applications.
- M. Heilman, L. Zhao, J. Pino, and M. Eskenazi. 2008. Retrieval of reading materials for vocabulary and reading practice. In Proc. of the 3rd Workshop on Innovative Use of NLP for Building Educational Applications.
- M. Heilman and M. Eskenazi. 2007. Application of automatic thesaurus extraction for computer generation of vocabulary questions. In Proc. of the SLaTE Workshop on Speech and Language Technology in Education.
- M. Heilman, A. Juffs, and M. Eskenazi. 2007. Choosing reading passages for vocabulary learning by topic to increase intrinsic motivation. In Proc. of AIED.

- M. Heilman and M. Eskenazi. 2006. Language learning: Challenges for intelligent tutoring systems. In Proc. of the Workshop of Intelligent Tutoring Systems for Ill-Defined Tutoring Systems. Eight International Conference on Intelligent Tutoring Systems.
- K. M. Eberhard, M. Scheutz, and M. Heilman. 2005. An empirical and computational test of linguistic relativity. In Proc. of the Cognitive Science Society Conference.

Technical Reports

- D. Yogatama, M. Heilman, B. O'Connor, C. Dyer, B. R. Routledge, and N. A. Smith. 2011. Predicting Responses and Discovering Social Factors in Scientific Literature. Language Technologies Institute, Carnegie Mellon University Technical Report CMU-LTI-11-015.
- N. Schneider, R. Hwa, P. Gianfortoni, D. Das, M. Heilman, A. W. Black, F. L. Crabbe, and N. A. Smith. 2010. Visualizing Topical Quotations Over Time to Understand News Discourse. Language Technologies Institute, Carnegie Mellon University Technical Report CMU-LTI-10-013.
- M. Heilman and N. A. Smith. 2009. Question Generation via Overgenerating Transformations and Ranking. Language Technologies Institute, Carnegie Mellon University Technical Report CMU-LTI-09-013.

Unpublished Presentations

- M. Heilman and N. A. Smith. 2009. Tree Edit Models for Sentence Pair Tasks. Language Technologies Institute Student Research Symposium.
- M. Heilman and M. Eskenazi. 2006. Authentic, Individualized Practice for English as a Second Language Vocabulary. Presented at Interfaces of Intelligent Computer-Assisted Language Learning Workshop at the Ohio State University, Columbus, OH, 12/06. Unpublished.
- A. Juffs, M. Eskenazi, J. Callan, L. Wilson, M. Heilman, K. Collins-Thompson, and T. Pelletreau. 2006. Promoting robust learning of vocabulary through computer assisted language learning. Meeting of the American Association for Applied Linguistics, Montreal.
- A. Juffs, L. Wilson, M. Eskenazi, J. Callan, J. Brown, K. Collins-Thompson, M. Heilman, T. Pelletreau, and J. Sanders. 2006. Robust learning of vocabulary: investigating the relationship between learner behaviour and the acquisition of vocabulary (poster). At The 40th Annual TESOL Convention and Exhibit (TESOL 2006).

Invited Talks

- M. Heilman. September 21, 2010. Using Natural Language Processing to Develop Instructional Content. Presented at Darmstadt University of Technology, Darmstadt, Germany.
- M. Heilman. September 20, 2010. Automatic Factual Question Generation. Presented at Darmstadt University of Technology, Darmstadt, Germany.