

Kevin Stowe | Curriculum Vitae

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I'm a fifth year PhD student in the Department of Linguistics at the University of Colorado under the direction of professors Martha Palmer and Jim Martin. My primary research is in Natural Language Processing (NLP), particularly in automatic metaphor detection, lexical semantics, and machine learning. My dissertation research is on how to better represent syntactic information for automatic detection and interpretation of metaphors. I successfully defended my dissertation proposal, "Leveraging Syntax for Automatic Metaphor Processing", in May of 2018 and plan on defending my dissertation in April of 2019.

I also work with professor Leysia Palen in the Department of Computer Science, applying NLP technology to the understanding of social media data produced during natural disasters. We work extensively with the National Atmospheric Research lab (NCAR) to analyze and interpret social media responses and reactions to natural disasters. This work has culminated in the production of annotation schema and machine learning techniques for identifying vulnerable populations and studying their behavior on social media.

Education

Current.....

- **University of Colorado, Boulder** **Boulder, Colorado**
PhD Student, Linguistics. Advisor : Martha Palmer *2013–Present*
Fifth year PhD student in Linguistics and Cognitive Science. Preliminary examination in evaluating computational approaches to metaphor detection and interpretation.

Previous.....

- **Indiana University** **Bloomington, Indiana**
MA, Linguistics *2009–2011*
Coursework in corpus linguistics, computational approaches to syntax, discrete mathematics and natural language processing.
GPA : 3.5
- **Michigan State University** **East Lansing, Michigan**
BA, Linguistics *2004–2009*
Coursework included core linguistics, advanced semantics and pragmatics, and German and Russian languages.
GPA : 3.1

Research Projects

- **Computational Language and Education Research Lab (CLEAR)**
adv: Martha Palmer
I work with Professor Martha Palmer on a variety of computational lexical resources, including VerbNet and PropBank. My responsibilities include ensuring compatibility with outside resources, implementation of new infrastructure, developing interface tools for other researchers, and improving the accuracy, consistency,

and coverage of the resources. Our current work involves linking VerbNet with the Generative Lexicon and improving consistency among semantic predicates, and improving automatic classification with better annotation.

For more, see <https://verbs.colorado.edu/verbnet/>

- **Communicating Hazard Information in the Modern Environment (CHIME)**

adv: Leysia Palen

I also work with the Empowering the Public with Information in Crisis (EPIC) lab at the University of Colorado along with the National Center for Atmospheric Research (NCAR). Our goals are to identify relevant information from social media during natural disasters to assist first responders, government agencies, and affected populations. My current research is in improving machine learning classification of relevant tweets, as well as using relevance classification and other features to predict evacuation behavior. We're also investigating using NLP and geo-location based tools to predict evacuation during hurricane events.

For more, see <http://epic.cs.colorado.edu/>

- **Preliminary Examination Research : Metaphor Detection**

adv: Martha Palmer

My preliminary examination for the University of Colorado was a pilot study of using semantic roles to automatically detect metaphor in text. I focused on a subset of verbs, and checked differences in selectional preferences of the verbs and their arguments. Following this up, I examined a variety of metaphor theories and the implications of their use for metaphor detection and interpretation. I aim to continue this research by studying the use of word embeddings and neural models, as well as traditional feature-based machine learning and semantic role labeling, for metaphor detection and interpretation.

Technical skills

- **Programming Languages:** Proficient in Python and Java, with some experience in C++, Ruby, R, PHP, and SQL.
Also web development experience with HTML, CSS, Javascript and PHP.
- **Framework Experience:** Extensive experience with machine learning and NLP toolkits, including SciKit-Learn, ClearNLP, Stanford Core NLP, Gensim, and Keras.
- **Linguistic Background:** Traditional background in phonetics, phonology, morphology, syntax, and semantics. My primary interests are in lexical semantics, pragmatics, formal logic, and metaphor interpretation.

Publications and More

Primary Author.....

- Stowe, Kevin; Anderson, Jennings; Palmer, Martha; Palen, Leysia; Anderson, Kenneth M.; Improving Classification of Twitter Behavior During Hurricane Events, accepted to *Workshop on Natural Language Processing for Social Media (SocialNLP)*, held with the 56th Meeting of the Association of Computational Linguistics (ACL), 2018, Melbourne, Australia
- Stowe, Kevin; Palmer, Martha; Leveraging Syntactic Constructions for Metaphor Identification and Interpretation, in press, *Workshop on Figurative Language Processing*, held with the 16th Meeting of the North American Association of Computational Linguistics (NAACL), 2018, New Orleans, Louisiana
- Stowe, Kevin; Paul, Michael J.; Palmer, Martha; Palen, Leysia; Anderson, Kenneth; Identifying and Categorizing Disaster-Related Tweets, in *Proceedings of the International Workshop on Natural Language Processing for Social Media* at the Conference on Empirical Methods in Natural Language Processing (EMNLP), pg 1-6, 2016, Austin, TX

Contributing Author.....

- Demuth, Julie L. et al, "sometimes da #beachlife ain't always da wave": Understanding People's Evolving Hurricane Risk Communication, Risk Assessments, and Responses Using Twitter Narratives, accepted to *Weather, Climate, and Society*, 2018
- Palmer, Martha et al, The Pitfalls of Shortcuts: Tales from the word sense tagging trenches, (2017) *Essays in Lexical Semantics and Computational Lexicography - In Honor of Adam Kilgarriff*. M. Diab, A. Villavicencio, M. Apidianaki, V. Kordoni, A. Korhonen, P. Nakov, M. Stevenson (editors). Springer series Text, Speech and Language Technology. Springer
- Morss, Rebecca et al, Hazardous Weather Predication and Communication in the Modern Information, *Bulletin of the American Meteorological Society*, 98, pg 2653-2674, 2016
- Anderson, Jennings et al; Far Far Away in *Far Rockaway*: Responses to Risks and Impacts during Hurricane Sandy through First-Person Social Media Narratives, in *Proceedings of ISCRAM*, 2016, Rio de Janeiro, Brazil
- Bonial, Claire; Stowe, Kevin; Palmer, Martha; Renewing and Revising SemLink, in *The GenLex Workshop on Linked Data in Linguistics*, pg 9-17, 2013, Pisa, Italy

Other.....

- Program Committee Member, Conference on Computational Natural Language Learning (CoNLL), 2017, Vancouver, Canada
- Program Committee Member, Corpus Linguistics Fest, 2016, Bloomington, Indiana, <http://cl.indiana.edu/clif16/>
- Student Volunteer, North American Association of Computational Linguistics (NAACL) 2015, Denver, Colorado

Previous Employment

- **FindMyAudience** **Boulder, Colorado**
NLP Consultant *May 2015–October 2015*
I worked for FindMyAudience, a technology startup, to identify possible audiences for authors and publishing companies. Together we developed methods for identifying book similarities and consumer interests from social media and other sources using continuous word representations and latent semantics models.
- **Avaya Labs** **Westminster, Colorado**
NLP Researcher *Summer 2013*
As a research intern, I did analysis of social media data (Twitter and Facebook) using machine learning algorithms, particularly clustering, to determine trends in user interactions with public company sites. We identified differences in positive and negative reactions to a variety of companies based on post topics.
- **Jackson National Life** **Okemos, Michigan**
Software Developer *2011-2012*
I started as a software trainee and became a developer. Studying Java and SQL, I worked to promote new branches of company business and provide support to company staff.

Interests and extra-curricular activity

- I tutored other Linguistic students in computer science, particularly in the aim of improving basic programming skills. This allowed me to develop my communication skills as well as my knowledge of other programming languages, while allowing me to help our linguistic community. My tutoring was primarily in C++, with any additional support colleagues required.
- Outside of academics, I am an aspiring chess player and musician. I also enjoy skiing, camping, and generally being outside.