Carolyn Jane Anderson

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Research Focus

My research focuses on context-sensitive expressions: words whose meanings change depending on who is speaking to whom, and where. More broadly, I am interested in how conversation participants use their knowledge about each other's mental states. Do speakers accommodate their listeners' visual perspectives on the scene? Do listeners use their knowledge of a speaker's opinions to better interpret their sentences?

These aspects of language are some of the most challenging for artificial intelligence to grasp, because they are situational, grounded, and interactive. Exploring these questions can help us understand general cognitive behavior such as theory of mind (our beliefs about other people's mental states), and help artificial intelligence learn to use language in a dynamic, responsive way.

Education

Ph.D. in Linguistics. University of Massachusetts, Amherst — Summer 2020 (expected)
Thesis title: Modeling Perspective
Advisors: Brian Dillon and Rajesh Bhatt

M.A. in Linguistics. University of Massachusetts, Amherst — May 2019

B.A. in Linguistics and minor in Computer Science. Swarthmore College — June 2014
High Honors in Linguistics and Natural Language Models

Publications

1. Anderson, Carolyn Jane. *Tomorrow* is not always a day away. *Proceedings of Sinn und Bedeutung* (SuB) 23, 2019. **Selected for oral presentation**.
2. Anderson, Carolyn Jane and Brian Dillon. Guess who's coming (and who's going): bringing perspective to the Rational Speech Acts framework. *Proceedings of the Society for Computation in Linguistics* (SCiL), 2019.
3. Anderson, Carolyn Jane and Brook Danielle Lillehaugen. 2016. Negation in Colonial Valley Zapotec. *Transactions of the Philological Society* 114(3).
4. Anderson, Carolyn Jane, Nate Foster, Arjun Guha, Jean-Baptiste Jeannin, Dexter Kozen, Cole Schlesinger, and David Walker. NetKAT: Semantic foundations for networks. *ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages* (POPL), 2014. **Selected for oral presentation.**

Manuscripts

1. Anderson, Carolyn Jane. 2019. Tomorrow isn't always a day away: Non-utterance time readings of *tomorrow*. Under revision.
2. Anderson, Carolyn Jane and Brian Dillon. 2019. Taking other perspectives into account: modeling the use of perspectival expressions in discourse. Ms., University of Massachusetts, Amherst.

3. Anderson, Carolyn Jane. 2017. The andative and venitive construction in San Lucas Quiaviní Zapotec. Ms., University of Massachusetts, Amherst.

4. Anderson, Carolyn Jane. 2014. I talk it and I feel it: Language attitudes of Moroccan university students. Honors thesis, Swarthmore College.

Conference Presentations

1. Anderson, Carolyn Jane and Tessa Patapoutian. Can neural network language models understand spatial perspective? Poster presented at the Bridging AI and Cognitive Science (BAICS) workshop, at the International Conference on Learning Representations (ICLR), 2020.

2. Anderson, Carolyn Jane and Brian Dillon. Taking other perspectives into account: an RSA model of perspectival reasoning. Talk given at Rational Approaches in Language Science (RAiLS), 2019.

3. Anderson, Carolyn Jane. Explaining the progressive motion verb puzzle in Zapotec. Talk given at the Texas Linguistics Society, 2019.

4. Anderson, Carolyn Jane. *Tomorrow* isn't always a day away. Poster presented at the 31st annual CUNY Human Sentence Processing Conference, 2018.

5. Anderson, Carolyn Jane. The San Lucas Quiaviní Zapotec andative and venitive. Talk presented at the Society for the Study of Indigenous Languages of the Americas (SSILA) annual meeting, 2018. **Honorable Mention, Best Student Paper Presentation**

6. Anderson, Carolyn Jane. The andative and venitive construction in San Lucas Quiaviní Zapotec. Talk presented at Multi-Verb Constructions: Semantic, Syntactic and Typological Perspectives (MVC), 2017.

7. Anderson, Carolyn Jane and Brook Danielle Lillehaugen. The morphosyntax of negation in Colonial Valley Zapotec. Talk presented at the Society for the Study of Indigenous Languages of the Americas (SSILA) annual meeting, 2015.

8. Anderson, Carolyn Jane and Brook Danielle Lillehaugen. La morfosintaxis de la negation en el zapoteco del Valle colonial. Talk presented at Coloquio sobre Lenguas Otomangues y Vecinas (COLOV) IV: Mario Molina Cruz, 2014.

9. Anderson, Carolyn Jane. Language ideology and human rights doctrine in Morocco. Talk presented at New Ways of Analyzing Variation (NWAV) 42, 2013.

Invited Talks

1. Boston University, Department of Linguistics. "Guess Who's Coming to Dinner: a Bayesian approach to modeling perspective." 2019.

2. Colgate University, Department of Computer Science. "Guess Who's Coming to Dinner: a Bayesian approach to modeling perspective." 2019.

3. Denison University, Department of Data Analytics. "Guess Who's Coming to Dinner: a Bayesian approach to modeling perspective." 2019.

4. James Madison University, Department of Computer Science. "Guess Who's Coming to Dinner: a Bayesian approach to modeling perspective." 2019.

5. Mount Holyoke College, Department of Computer Science. "Guess Who's Coming to Dinner: a Bayesian approach to modeling perspective." 2019.

6. Occidental College, Department of Computer Science. "Guess Who's Coming to Dinner: a Bayesian approach to modeling perspective." 2019.

7. University of Massachusetts, Amherst, Department of Computer Science. "Guess Who's Coming to Dinner: a Bayesian approach to modeling perspective." 2019.
8. Wellesley College, Department of Computer Science. "Guess Who's Coming to Dinner: a Bayesian approach to modeling perspective." 2019.

Other Presentations

1. Anderson, Carolyn Jane. Reasoning about perspectives. Abstract selected for presentation at the Science Speed Geeking event at the XPrag Summer School, 2019.
2. Anderson, Carolyn Jane. Use your words (better): two projects on making better use of text for ASR. Intern presentation, BBN Technologies, 2019.
3. Anderson, Carolyn Jane. Neural networks for ASR: focusing on the text. Intern presentation, BBN Technologies, 2018.

Teaching

1. Instructor, University of Massachusetts Amherst, Linguistics Department — Fall 2019
   First Year Seminar: Technology for Language Revitalization
2. Teaching Assistant, University of Massachusetts Amherst, Linguistics Department — Fall 2019
   Language Processing and the Brain (Instructor: Brian Dillon)
3. Instructor, Mt. Holyoke College, Computer Science Department — Fall 2018
   Programming Languages
4. Teaching Assistant, University of Massachusetts Amherst, Linguistics Department — Spring 2017
   Introduction to Linguistic Theory (Instructor: Seth Cable)
5. Teaching Assistant, University of Massachusetts Amherst, Linguistics Department — Fall 2017
   Cognitive Modeling (Instructor: Gaja Jarosz)

Advising

Undergraduate Research Assistants

Tessa Patapoutian — Spring 2019-present
Project: experimental and computational modeling of perspectival motion verbs

Alicia LeClair — Spring 2017
Project: Perspectival motion verbs in Western Tlacolula Valley Zapotec

Funding

BBN Technologies Research Fellowship — Spring 2019 and Spring 2020

Selkirk Linguistics Outreach Fund Award — 2016
Project title: *Perspective in Valley Zapotec*

University of Massachusetts Amherst Fellowship — 2015-2016

Fulbright Canada Research Scholarship — 2014-2015
Project title: *Old Languages, New Technologies: Youth Engaged in First Nations Language Revitalization*

Programming Languages Mentoring Workshop Scholarship 2013 and 2014

Marianne Durand Frey '57 Scholar 2011-2014

National Merit Scholar 2010

Awards

Computing Research Association Outstanding Undergraduate Researchers Award Finalist 2014

The Linguistics Prize in Applications of Theory, Swarthmore College 2014

Phi Beta Kappa Inductee 2014

Philip M. Hicks Prize for Best Critical Essay 2013

Positions

Wellesley College, Computer Science Department Fall 2021
Assistant professor

BBN Technologies, Analytics and Machine Intelligence (Cambridge, MA) June 2018–present
Research Intern
Topics:
- Multi-dialect recurrent neural network language models for ASR
- Masked neural language model prediction for acoustic model rescoring
- Neural machine translation for post-processing numerical terms in ASR
- Statistical analysis of keyword search performance

University of Massachusetts Amherst, Linguistics Department Spring 2017
Research Assistant
Primary investigator: Seth Cable
Topic: Semantics of Endangered Languages in North America

University of Massachusetts Amherst, Linguistics Department Fall 2016
Research Assistant
Primary investigator: Gaja Jarosz
Topic: Computational phonology

Fulbright Canada, University of Victoria and McGill University September 2014–May 2015
Fulbright Research Fellow
Advisors: Leslie Saxon and Jessica Coon
Topic: Technology in First Nations Language Revitalization

Haverford College, Ticha Digital Humanities Project (Haverford, PA) June 2014–August 2014
Research Intern
Advisor: Brook Lillehaugen
Topic: Web-based preservation and presentation of Colonial Valley Zapotec texts

Cornell University, Computer Science Department (Ithaca, NY) May 2013–August 2013
Research Intern
Advisor: Nate Foster
Topic: NetKAT: a domain-specific language for networking

Service

Organizer: Neural Networks in Linguistics Reading Group	2018-present
Graduate Representative to Faculty Meetings	2016–2017
Skype A Scientist Volunteer	Spring 2020

Skills

Natural Languages

- Bangla (novice)
- French (advanced)
- German (intermediate)
- Modern Standard Arabic (intermediate)
- Spanish (intermediate)
- Western Tlacolula Valley Zapotec (fieldwork)

Domain Specific Languages

- Tensorflow (intermediate)
- WebPPL (intermediate)

Programming Languages

- C++ (novice)
- Coq (intermediate)
- Figaro (intermediate)
- Haskell (novice)
- Java (intermediate)
- JavaScript (intermediate)
- Python (advanced)
- R (advanced)
- Racket (advanced)

References

Brian Dillon
Department of Linguistics, University of Massachusetts, Amherst (brian@linguist.umass.edu)

Rajesh Bhatt
Department of Linguistics, University of Massachusetts, Amherst (bhatt@linguist.umass.edu)

Daniel Altshuler
School of Cognitive Science, Hampshire College (dgaCS@hampshire.edu)

Matthew Snover
Artificial and Machine Intelligence, BBN Technologies (matt.snover@raytheon.com)