

CURRICULUM VITAE
Peter Alexander Jansen, PhD
Assistant Professor, School of Information, University of Arizona.
(520) 576-0232 and pajansen@email.arizona.edu
www.cognitiveai.org

Chronology of Education

- 2010 **Ph.D., Psychology & Neuroscience, McMaster University, Canada**
Dissertation: A self-organizing computational neural network architecture with applications to sensorimotor grounded linguistic grammar acquisition.
Advisors: Lee Brooks, Alex Sevigny, Karin Humphreys, Scott Watter (Chair)
Major Fields: Cognitive Modelling, Knowledge Representation
- 2005 **B.I.S., University of Waterloo, Canada**
Thesis: Developmental Knowledge Representation
Advisors: Chrysanne DiMarco, Paul Thagard
Major Fields: Computer Science, Cognitive Science, Physics

Chronology of Employment

- 2016 **Assistant Professor**, School of Information, University of Arizona
Courtesy Appointment in Department of Linguistics.
- 2015 **Research Professor**, Department of Linguistics, University of Arizona
- 2013 **Postdoctoral Research Associate**, School of Information, University of Arizona
- 2012 **Senior Artificial Intelligence Engineer**, Scanadu Inc, NASA Ames Research Campus
- 2010 **Postdoctoral Research Associate**, Electrical Engineering, University of Arizona

Honors and Awards

- 2021 **Teaching Award**, School of Information, University of Arizona (Department-Level)

Service/Outreach (limited to period in rank)

Local/State Outreach

- 2016- Outreach/Teaching at Xerocraft Tucson (a local makerspace)
- 2016 Public Talk, Phoenix Science Center, Phoenix, AZ

National/International Outreach

- 2021 TextGraphs Workshop 2021 Shared Task and Organizing Committee
- 2020 National Science Foundation: Information and Intelligent Systems (IIS) Reviewer
- 2020 TextGraphs Workshop 2020 Shared Task and Organizing Committee
- 2019 TextGraphs Workshop 2019 Shared Task and Organizing Committee
- 2017 Public Talk, Penguicon, Detroit, MI
- 2016 Public Talk, North-east Star Trek Convention, Albany, NY

Department Committee(s)

- 2016- Department Graduate Committee (all years in rank, minus 2017)
- 2017 Department Knowledge River Committee (specializes in needs of BIPOC students)

Publications/Creative Activity (Published or Accepted)

In my primary fields of artificial intelligence and computational linguistics, conference publications are generally ranked higher than journal articles. These are full papers that go through the normal peer review process, as in a journal. Google Scholar Rankings and h5-indices provided where available.

Chapters in scholarly books and monographs

- 31. Walls, R., and **Jansen, P.** (2022) Information Organization, Storage, and Management. In Jah., M. (ed.) *Space Domain Awareness*. Colorado Springs: CEI, 219-242.

Refereed conference and workshop articles, published or accepted in final form

- 30. Xie, Z., Kwak, A.S., George, E., Dozal, L.W., Van, H., Jah, M., Furfaro, R. and **Jansen, P.** (2022). Extracting Space Situational Awareness Events from News Text. In *Proceedings of the Language Resources and Evaluation Conference (LREC)*.
Google Scholar Ranking: LREC ranked #6 in Computational Linguistics (h5: 53)
- 29. **Jansen, P.**, Smith, K., Moreno, D., Ortiz., H. (2021). On the Challenges of Evaluating Compositional Explanations in Multi-Hop Inference: Relevance, Completeness, and Expert Ratings. In *Proceedings of Empirical Methods in Natural Language Processing (EMNLP)*.
Google Scholar Ranking: EMNLP ranked #2 in Computational Linguistics (h5: 132)
- 28. Dalvi., B., **Jansen, P.**, Tafjord, O., Xie, Z., Smith., H., Pipatanangkura, L., Clark, P. (2021). Explaining Answers with Entailment Trees. In *Proceedings of Empirical Methods in Natural Language Processing (EMNLP)*.
Google Scholar Ranking: EMNLP ranked #2 in Computational Linguistics (h5: 132)
- 27. **Jansen, P.** (2020). Visually-Grounded Planning without Vision: Language Models Infer Detailed Plans from High-level Instructions. In *Findings of Empirical Methods in Natural Language Processing (EMNLP Findings)*.
Google Scholar Ranking: EMNLP ranked #2 in Computational Linguistics (h5: 132)
- 26. **Jansen, P.** (2020). CoSaTa: A Constraint Satisfaction Solver and Interpreted Language for Semi-Structured Tables of Sentences. In *Proceedings of Empirical Methods in Natural*

- Language Processing (EMNLP) System Demonstrations.*
Google Scholar Ranking: EMNLP ranked #2 in Computational Linguistics (h5: 132)
25. Xu, D., **Jansen, P.**, Martin, J., Xie, Z., Yadav, V., Madabushi, H. T., Tafford O., and Clark, P. (2020). Multi-class Hierarchical Question Classification for Multiple Choice Science Exams. In *Proceedings of the Language Resource and Evaluation Conference (LREC)*.
Google Scholar Ranking: LREC ranked #6 in Computational Linguistics (h5: 53)
 24. Smith, S., Zhang, Z., Culnan, J., and **Jansen, P.** (2020). ScienceExamCER: A High-Density Fine-Grained Science-Domain Corpus for Common Entity Recognition. In *Proceedings of the Language Resource and Evaluation Conference (LREC)*.
Google Scholar Ranking: LREC ranked #6 in Computational Linguistics (h5: 53)
 23. Xie, Z., Thiem, S., Martin, J., Wainwright, E., Marmorstein, S., and **Jansen, P.** (2020). WorldTree V2: A Corpus of Science-Domain Structured Explanations and Inference Patterns supporting Multi-Hop Inference. In *Proceedings of the Language Resource and Evaluation Conference (LREC)*.
Google Scholar Ranking: LREC ranked #6 in Computational Linguistics (h5: 53)
 22. Khot, T., Clark, P., Guerquin, M, **Jansen, P.**, and Sabharwal., A. (2020). QASC: A Dataset for Question Answering via Sentence Composition. In *Proceedings of the Association for the Advancement of Artificial Intelligence (AAAI)*.
Google Scholar Ranking: AAAI ranked #4 in Artificial Intelligence (h5: 157)
 21. Thiem, S., and **Jansen, P.** (2019). Extracting Common Inference Patterns from Semi-Structured Explanations. In *Proceedings of the Workshop on Commonsense Inference in Natural Language (COIN)*.
 20. **Jansen, P.** (2018). Multi-hop Inference for Sentence-level TextGraphs: How Challenging is Meaningfully Combining Information for Science Question Answering? In *Proceedings of the 12th Workshop on TextGraphs (TextGraphs)*.
 19. **Jansen, P.**, Wainwright, E., Marmorstein, S., and Morrison, C. (2018). WorldTree: A Corpus of Explanation Graphs for Elementary Science Questions supporting Multi-hop Inference. In *Proceedings of the Language Resource and Evaluation Conference (LREC)*.
Google Scholar Ranking: LREC ranked #6 in Computational Linguistics (h5: 53)
 18. Kwon, H., Trivedi, H., **Jansen, P.**, Surdeanu, M., and Balasubramanian, N. (2018). Controlling Information Aggregation for Complex Question Answering. In *Proceedings of the European Conference on Information Retrieval (ECIR)*.
Google Scholar Ranking: ECIR (h5: 27)
 17. **Jansen, P.** (2017). A Study of Automatically Acquiring Explanatory Inference Patterns from Corpora of Explanations: Lessons from Elementary Science Exams. *Proceedings of the Workshop on Automated Knowledge Base Construction (AKBC)*.
 16. Sharp, B., Surdeanu, M., **Jansen, P.**, Valenzuela-Escarcega, M. A., Clark, P., and Hammond, M. (2017). Tell Me Why: Using Question Answering as Distant Supervision for Answer Justification. *Proceedings of the Conference on Natural Language Learning (CoNLL)*.
Google Scholar Ranking: CoNLL ranked #10 in Computational Linguistics (h5: 43)
 15. **Jansen, P.**, Balasubramanian, N., Surdeanu, M., and Clark, P. (2016). What’s in an Explanation? Characterizing Knowledge and Inference Requirements for Elementary Science Exams. In *Proceedings of the Conference on Computational Linguistics (COLING)*.
Google Scholar Ranking: COLING ranked #4 in Computational Linguistics (h5: 64)
 14. Sharp, B., Surdeanu, M., **Jansen, P.**, Clark, P., and Hammond, M. (2016). Creating

- Causal Embeddings for Question Answering with Minimal Supervision. In *Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP)*.
Google Scholar Ranking: EMNLP ranked #2 in Computational Linguistics (h5: 132)
13. Sharp, B. **Jansen, P.**, Surdeanu, M., and Clark, P. (2015). Spinning Straw into Gold: Using Free Text to Train Monolingual Alignment Models for Non-factoid Question Answering. In *Proceedings of the Conference of the North American Chapter of the Association for Computational Linguistics-Human Language Technologies (NAACL HLT)*.
Google Scholar Ranking: NAACL ranked #3 in Computational Linguistics (h5: 105)
 12. **Jansen, P.**, Surdeanu, M., and Clark, P. (2014). Discourse Complements Lexical Semantics for Non-factoid Answer Reranking. In *Proceedings of the Annual Meeting of the Association for Computational Linguistics (ACL)*.
Google Scholar Ranking: ACL ranked #1 in Computational Linguistics (h5: 157)
 11. Forbes, A., Surdeanu, M., **Jansen, P.**, and Carrington, J. (2013) Transmitting Narrative: An Interactive Shift-Summarization Tool for Improving Nurse Communication. In *Proceedings of the IEEE Workshop on Interactive Visual Text Analytics*.
 10. **Jansen, P.**, Dunlop, M. J., Golish, D. R., and Gehm, M. E. (2012). Adaptive feature-specific spectral imaging. In *Proceedings of the SPIE Defense Security and Sensing Symposium (SPIE DSS)*.

Refereed journal articles, published or accepted in final form

9. **Jansen, P.**, Sharp, B., Surdeanu, M., and Clark, P. (2017). Framing Question Answering as Building and Ranking Answer Justifications. *Computational Linguistics (CL)*, 43, 407-449.
Google Scholar Ranking: CL ranked #15 in Computational Linguistics (h5: 30)
8. Fried, D., **Jansen, P.**, Hahn-Powell, G., Surdeanu, M., and Clark, P. (2015). Higher-order Lexical Semantic Models for Non-factoid Answer Reranking. *Transactions of the Association of Computational Linguists (TACL)*, 3, 197-210.
Google Scholar Ranking: TACL ranked #5 in Computational Linguistics (h5: 59)
7. Golish, D., Vera, E., Kelly, K., Gong, Q., **Jansen, P.**, Hughes, J., Kittle, D., Brady, D., and Gehm, M. (2012). Development of a scalable image formation pipeline for multiscale gigapixel photography. *Optics Express (OE)*, 20, 22048-22062.
Google Scholar Ranking: OE ranked #3 in Optics and Photonics (h5: 98)
- * 6. **Jansen, P.**, and Watter, S. (2012). Strong systematicity through sensorimotor conceptual grounding: an unsupervised, developmental approach to connectionist sentence processing. *Connection Science (CS)*, 24, 25-55.
Google Scholar Ranking: CS (h5: 17)
- * 5. **Jansen, P.**, Fiacconi, C., and Gibson, L. (2010). A computational vector-map model of neonate saccades: Modulating the externality effect through refraction periods. *Vision Research (VR)*, 50, 2551-2558.
Google Scholar Ranking: VR ranked #18 in Ophthalmology (h5: 38)
- * 4. **Jansen, P.**, and Watter, S. (2008). SayWhen: An automated method for high-accuracy speech onset detection. *Behavior Research Methods (BRM)*, 40, 744-751.
Google Scholar Ranking: BRM (h5: 70)

* denotes publications substantially based on work completed as a graduate student.

Non-refereed conference and workshop articles

3. Thayaparan, M., Valentino, M., **Jansen, P.**, Ustalov, D. (2021). TextGraphs 2021 Shared Task on Multi-Hop Inference for Explanation Regeneration. In Proceedings of the 15th Workshop on TextGraphs (TextGraphs).
2. **Jansen, P.**, Ustalov, D. (2020). TextGraphs 2020 Shared Task on Multi-Hop Inference for Explanation Regeneration. In Proceedings of the 14th Workshop on TextGraphs (TextGraphs).
1. **Jansen, P.**, Ustalov, D. (2019). TextGraphs 2019 Shared Task on Multi-Hop Inference for Explanation Regeneration. In Proceedings of the 13th Workshop on TextGraphs (TextGraphs).

Selected Computer Programs and Open Source Hardware

Open Source Hardware is like Open Source Software, but also includes designs for electronic hardware (electronics and mechanical designs), all released under similarly permissive licenses.

- P3. **Open Source High-Speed Magnetic Camera.** A high-speed camera for magnetic fields. 2018. <https://www.sparkfun.com/products/14652/>.
- P2. **Open Source Computed Tomography (CT) Scanner.** Two models of computed tomography (CT) scanners, intended for science pedagogy. 2014-2016. <https://hackaday.io/project/5946-openct2>.
- P1. **The Tricorder Project.** Several models of handheld scientific scanners, similar to the Tricorder from Star Trek. 2014-2020. <https://hackaday.io/project/1395-open-source-science-tricorder>.

Work in Progress

Note: The Association for Computational Linguistics Rolling Review (ARR) is the new unified peer-review system for most top-tier venues published by the Association for Computational Linguistics.

34. Wang, R., **Jansen, P.**, Cote, M.A., Ammanabrolu, P. ScienceWorld: Is your Agent Smarter than a 5th grader. *arXiv:2203.07540. Submitted to Association for Computational Linguistics Rolling Review (ARR).*
33. **Jansen, P.** A Systematic Survey of Text Worlds as Embodied Natural Language Environments. *arXiv:2107.04132. Submitted to WordPlay Workshop (Wordplay).*
32. **Jansen, P.** Darmok and Jalad at Tanagra: A Dataset and Model for English-to-Tamarian Translation. *arXiv:2107.08146*

Media

Exhibits

- 2015 **German Museum of Technology.** Open Source Science Tricorder Project placed on permanent exhibit. Berlin, Germany. <http://www.sdtb.de>

Selected Media Coverage

COVID-19

- M1. **UANews: UArizona Makers Race to Provide Personal Protective Equipment (April 2020)**
- M2. **UA SBS: SBS Champions: iSchool Professors Peter Jansen and Win Burleson Make COVID-19 Equipment (May 2020)**

UA Teaching

- M3. **UANews: Students in Engineering, iSchool Discover Sweet Success (June 2017)**
- M4. **Wildcat News: Eureka: UA maker class challenges student engineers (June 2017)**

Open Source Hardware

- M5. **Washington Post: Homemade tricorders and handheld health care (March 2012)**
- M6. **TechCrunch: A Chicken In Every Pot And An Open-Source Tricorder In Every Home (March 2012)**
- M7. **Ars Technica: Researcher publishes specs for real Linux-powered Star Trek tricorder (March 2012).**
- M8. **WIRED (UK): Researcher publishes specs for real Linux-powered Star Trek tricorder (March 2012)**
- M9. **PBS Arizona (TV): Technology and Innovation: A Working Tricorder (March 2012)**
- M10. **THE VERGE: Scientist designs and shares open-source plans for real-world Tricorders (March 2012)**
- M11. **Engadget: Tricorder designs go open course: can detect magnetic fields, reveal Trekkies (March 2012)**
- M12. **BoingBoing (Cory Doctorow): Open source “tricorders”: handheld sensor packages for everyone (March 2012)**
- M13. **International Business Times: Star Trek-like Tricorder Now a Reality: Why We’re so Excited? (March 2012)**
- M14. **Phys.org: Cognitive researcher designs and builds a real-world modular working tricorder (March 2012)**
- M15. **Vice.com: Star Trekkin’ IRL: The Iconic Tricorder Actually Exists (March 2012)**
- M16. **Gizmodo: The World Gets One Step Closer To a Working Tricorder (March 2012)**
- M17. **ZDNet Smart Planet: How to make your own tricorder (March 2012)**
- M18. **MSNBC: Star Trek-like open-source tricorder sees magnetic fields and more (March 2012)**
- M19. **Giyism: Nerds invent tricorder, of course it runs on Linux (March 2012)**
- M20. **CBC: ‘Tricorder’ project seeks helping hands (April 2012)**
- M21. **Reuters: Scientist beams up a real “Star Trek” tricorder (April 2012).**
- M22. **Forbes: Tricorder Update – Social Medicine is the Next Big Thing After Social Media (May 2012)**

- M23. **NASA.GOV: From Star Trek to SCOUT: The Story of a Real-World Medical Tricorder** (May 2012)
- M24. **Mythbusters Jamie & Adam's TESTED.COM: Maker Profile: Peter Jansen's Tricorder Project** (February 2013)
- M25. **Slashdot.org: Tricorder Project Releases Prototype Open Source 3D Printable Spectrometer** (September 2013)
- M26. **MAKE Magazine: Open-Source CT Scanner** (April 2014)
- M27. **Bloomberg: Star Trek's Tricorders are Almost Here** (June 2014)
- M28. **IEEE Spectrum: Make It So: Open Source, Arduino-Based Tricorder Nears Completion** (October 2014)
- M29. **CNET Tomorrow Daily: An Arduino Tricorder** (October 2014)
- M30. **UA News: Attention, Trekkies: Get your Tricorders here** (November 2014)
- M31. **Smithsonian: A List of All the Times People Have Tried to Build a Working Tricorder** (July 2015)
- M32. **Hackaday: Imaging Magnetism with a Hall Effect Camera** (August 2017)
- M33. **Hackaday: High Speed Imaging of Magnetic Fields** (February 2018)
- M34. **Hackaday: Coin-Operated Graphing Calculator Console** (February 2022)

Conferences/Scholarly Presentations (limited to period in rank)

Colloquia

- 2018 **Allen Institute for Artificial Intelligence.** Distinguished Lecture Series (invited)
- 2016 **University of Albany.** Department of Physics (invited)

Conferences

- 2022 **WordPlay Workshop** at North American Association for Computational Linguistics (NAACL) (invited)

Awarded Grants and Contracts (limited to period in rank)

Federal

- 2018 **National Science Foundation (NSF)**
Title: Explainable Natural Language Inference (Collaborative Research)
Amount: \$254,464 (UA portion, total award \$499,001).
Role: University of Arizona PI (Co-I: Surdeanu; Stonybrook PI: Balasubramanian)
Effort: 33%

Private Foundation

- 2021 **Allen Institute for Artificial Intelligence (AI2)**
Title: Compositional Explanations
Amount: \$50,000
Role: PI
Effort: 100%
- 2017 **Allen Institute for Artificial Intelligence (AI2)**
Title: Explanation-centered Structured Knowledge Base for Science Question Answering
Amount: \$60,000
Role: PI
Effort: 100%

Submitted Grants and Contracts (limited to period in rank)

Federal

- 2018 **National Science Foundation (NSF)**
Title: Aggregating Information for Inference and Explanation Generation
Amount Requested: \$249,370
Role: PI (Co-I: Morrison)
Effort: 90%
- 2018 **National Science Foundation (NSF)**
Title: Enhancing Nurse Decision-Making Via Augmented Communication Tools (ACTs)
Amount Requested: \$153,402
Role: Co-I (PI: Carrington, Co-I: Surdeanu)
Effort: 10%
- 2018 **Air Force Research Lab (AFRL)**
Title: Space Domain Awareness Collaborative Research Infrastructure
Amount Requested: \$3,305,080
Role: Co-I (PI: Furfaro, Co-I: Merchant, Walls, Gaylor, Reddy Kanupuru, Pearce, Gross)
Effort: 10%
- 2017 **National Science Foundation (NSF)**
Title: Aggregating Information for Inference and Explanation Generation
Amount Requested: \$247,433
Role: PI (Co-I: Morrison)
Effort: 90%

2017 **National Science Foundation (NSF)**
Title: Explainable Inference for Question Answering (Collaborative)
Amount Requested: \$480,925
Role: Co-I (PI: Surdeanu, Co-I: Balasubramanian)
Effort: 33%

2017 **Defence Advanced Research Projects Agency (DARPA)**
Title: Realizing a Space Domain Information Fusion Model
Amount Requested: \$515,982
Role: Co-I (PI: Jah, Co-Is: Furfaro, Breiger, Weiner, Walls, Reddy Kanupuru)
Effort: 14%

Industry

2017 **Amazon**
Title: Answering Questions and Explaining Answers to Users with Intelligent Personal Assistants: Ma
Amount Requested: \$69,040
Role: PI
Effort: 100%

2017 **Google, Inc.**
Title: Answering Complex Questions and Explaining Answers to Users with Intelligent Personal Assist
Amount Requested: \$43,206
Role: PI
Effort: 100%