

Daniel Khashabi

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Research Theme

Computational (Artificial) Intelligence, through the lens of Natural Language Understanding.

Education

- 2012–2019 *Ph.D. in Computer Science*
University of Pennsylvania (2017-2019)
University of Illinois, Urbana-Champaign (2012-2017)
Advisor: Prof. Dan Roth
Thesis title: *Reasoning-Driven Question-Answering for Natural Language Understanding*
- 2008–2012 *B.Sc. in Electrical Engineering*
Minor in Computer Science (2010-2012)
Amirkabir University of Technology (Tehran Polytechnic)
Advisor: Prof. Hamid Sheikhzadeh
- 2003–2008 *Diploma in Math and Physics*, Shahid Beheshti High School, Maragheh, Iran
National Organization For Development of Exceptional Talents (NODET)

Research Positions

- 2019-now *Young Investigator*, Allen Institute for Artificial Intelligence, Seattle, WA.
- 2019 *Post-doctoral fellow*, University of Pennsylvania, Philadelphia, PA
- 2017–2019 *Research Assistant*, University of Pennsylvania, Philadelphia, PA
- 2012–2017 *Research Assistant*, University of Illinois, Urbana-Champaign, IL
- Summer, 2016 *Research Intern*, Allen Institute for Artificial Intelligence (AI2), Seattle, WA
- Summer, 2015 *Research Intern*, Allen Institute for Artificial Intelligence (AI2), Seattle, WA
- Summer, 2014 *Research Intern*, Microsoft Research, Redmond, WA
- Summer, 2013 *Research Intern*, Microsoft Research, Cambridge, UK
- Summer, 2011 *Research Intern*, Media Processing Lab, Tehran Polytechnic, Tehran, Iran

Publications

Peer-reviewed Publications

* Venues are topically color-coded (*NLP*, *AI*, *Machine Learning*, *Vision*). Top tier venues are indicated with **bold**.

- [1] M. Geva, D. Khashabi, E. Segal, T. Khot, D. Roth, and J. Berant.
“Did Aristotle Use a Laptop? A Question Answering Benchmark with Implicit Reasoning Strategies”.
In: *Transactions of the Association for Computational Linguistics* (**TACL**).
2021.
- [2] T. Li, D. Khashabi, T. Khot, A. Sabharwal, and V. Srikumar.
“UnQovering Stereotypical Biases via Underspecified Questions”.
In: *Conference on Empirical Methods in Natural Language Processing* (**EMNLP**) - Findings.
2020.
- [3] D. Khashabi, S. Min, T. Khot, A. Sabharwal, O. Tafjord, P. Clark, and H. Hajishirzi.
“UnifiedQA: Crossing Format Boundaries With a Single QA System”.
In: *Conference on Empirical Methods in Natural Language Processing* (**EMNLP**) - Findings.
2020.
- [4] M. Gardner et al.
“Evaluating Models’ Local Decision Boundaries via Contrast Sets”.
In: *Conference on Empirical Methods in Natural Language Processing* (**EMNLP**) - Findings.
2020.
- [5] D. Khashabi, T. Khot, and A. Sabhwawal.
“More Bang for Your Buck: Natural Perturbation for Robust Question Answering”.
In: *Conference on Empirical Methods in Natural Language Processing* (**EMNLP**).
2020.
- [6] H. Zhang, Y. Song, D. Khashabi, and D. Roth.
“Commonsense Knowledge Discovery from Linguistic Graphs”.
In: *Proceedings of the International Joint Conference on Artificial Intelligence* (**IJCAI**).
2020.
- [7] B. Zhou, Q. Ning, D. Khashabi, and D. Roth.
“Temporal Common Sense Acquisition with Minimal Supervision”.
In: *Annual Meeting of the Association for Computational Linguistics* (**ACL**).
2020.
- [8] E. Sadeqi-Azer, D. Khashabi, A. Sabhwawal, and D. Roth.
“Not All Claims are Created Equal: Choosing the Right Approach to Assess Your Hypotheses”.
In: *Annual Meeting of the Association for Computational Linguistics* (**ACL**).
2020.
- [9] B. Zhou, D. Khashabi, Q. Ning, and D. Roth.
““Going on a vacation” takes longer than “Going for a walk”: A Study of Temporal Commonsense Understanding”.
In: *Conference on Empirical Methods in Natural Language Processing* (**EMNLP**).
2019.
- [10] S. Chen, D. Khashabi, C. Callison-Burch, and D. Roth.
“PerspectroScope: A Window to the World of Diverse Perspectives”.
In: *Annual Meeting of the Association for Computational Linguistics* (**ACL**) - Demonstrations.
2019.
- [11] S. Chen, D. Khashabi, W. Yin, C. Callison-Burch, and D. Roth.
“Seeing Things from a Different Angle: Discovering Diverse Perspectives about Claims”.
In: *Conference of the North American Chapter of the Association for Computational Linguistics* (**NAACL**).
2019.
- [12] B. Zhou, D. Khashabi, C.-T. Tsai, and D. Roth.

- “Zero-Shot Open Entity Typing as Type-Compatible Grounding”.
In: *Conference on Empirical Methods in Natural Language Processing (EMNLP)*.
2018.
- [13] D. Khashabi, S. Chaturvedi, M. Roth, S. Upadhyay, and D. Roth.
“Looking Beyond the Surface: A Challenge Set for Reading Comprehension over Multiple Sentences”.
In: *Conference of the North American Chapter of the Association for Computational Linguistics (NAACL)*.
2018.
- [14] D. Khashabi et al.
“CogCompNLP: Your Swiss Army Knife for NLP”.
In: *11th Language Resources and Evaluation Conference (LREC)*.
2018.
- [15] D. Khashabi, T. Khot, A. Sabharwal, and D. Roth.
“Question Answering as Global Reasoning over Semantic Abstractions”.
In: *Proceedings of The Thirty-Second Conference on Artificial Intelligence (AAAI)*.
2018.
- [16] D. Khashabi, T. Khot, A. Sabharwal, and D. Roth.
“Learning What is Essential in Questions”.
In: *Proceedings of the 21st Conference on Computational Natural Language Learning (CoNLL)*.
2017.
- [17] P. Kordjamshidi, D. Khashabi, C. Christodoulopoulos, B. Mangipudi, S. Singh, and D. Roth.
“Better call saul: Flexible programming for learning and inference in NLP”.
In: *Proceedings of the 26th International Conference on Computational Linguistics (COLING)*.
2016.
- [18] D. Khashabi, T. Khot, A. Sabharwal, P. Clark, O. Etzioni, and D. Roth.
“Question Answering via Integer Programming over Semi-Structured Knowledge”.
In: *Proceedings of the Twenty-Fifth International Joint Conference on Artificial Intelligence (IJCAI)*.
2016.
- [19] M. Sammons, C. Christodoulopoulos, P. Kordjamshidi, D. Khashabi, V. Srikumar, and D. Roth.
“EDISON: Feature Extraction for NLP, Simplified”.
In: *Proceedings of the Tenth International Conference on Language Resources and Evaluation (LREC)*.
2016.
- [20] P. Clark, O. Etzioni, T. Khot, A. Sabharwal, O. Tafjord, P. D. Turney, and D. Khashabi.
“Combining Retrieval, Statistics, and Inference to Answer Elementary Science Questions”.
In: *Proceedings of the Thirtieth Conference on Artificial Intelligence (AAAI)*.
2016.
- [21] K. Quanrud and D. Khashabi.
“Online Learning with Adversarial Delays”.
In: *Proceedings of the 28th International Conference on Neural Information Processing Systems (NeurIPS)*.
2015.
- [22] H. Peng, D. Khashabi, and D. Roth.
“Solving Hard Coreference Problems”.
In: *Proceedings of the Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL)*.
2015.
- [23] D. Khashabi, S. Nowozin, J. Jancsary, and A. W. Fitzgibbon.
“Joint Demosaicing and Denoising via Learned Nonparametric Random Fields”.
In: *IEEE Transactions on Image Processing (TIP)*.
2014.
- [24] M. Nokhbeh-Zaeem, D. Khashabi, H. A. Talebi, S. Navabi, and F. Vaziri.
“Adaptive tiled Neural Networks”.
In: *IEEE International Conference on Systems, Man, and Cybernetics (SMC)*.

2011.

Peer-reviewed Workshop Proceedings

- [25] P. Kordjamshidi, S. Singh, D. Khashabi, C. Christodoulopoulos, M. Sammons, S. Sinha, and D. Roth. “Relational Learning and Feature Extraction by Querying over Heterogeneous Information Networks”.
In: *Seventh International Workshop on Statistical Relational AI (StarAI)*. 2017.
- [26] Z. Fei, D. Khashabi, H. Peng, H. Wu, and D. Roth. “Illinois-Profiler: Knowledge Schemas at Scale”.
In: *Workshop on Cognitive Knowledge Acquisition and Applications (Cognitum)*. 2015.

Patents

- [27] R. S. B. Nowozin, D. Khashabi, J. M. Jancsary, B. J. Lindbloom, and A. W. Fitzgibbon. *Image demosaicing*.
US Patent 9,344,690.
May 2016.

Mentorship

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| 2017-2018 | Angela Sun, Salaar Kohari, Zheng Tian, Senior Project: <i>CoLabel</i> , Univ. of Pennsylvania |
| 2016-2017 | Guanheng Luo, Project: <i>CogComp-NLPy</i> , University of Illinois, Urbana-Champaign |
| 2014-2015 | Josh Camp, Paul Gibbons, Ryan Kelch, Deepak Shine, Dhruv Vajpeyi, Project: <i>Open-Eval</i> (Senior Project), University of Illinois, Urbana-Champaign |
| 2013-2014 | Tianxiao Zhang, <i>Experiments on Recursive Neural Networks for Textual Entailment</i> |

Invited Talks

- “Unify and Conquer: Towards a Unified View of Machine Comprehension”
 - Tel Aviv University, NLP talks, 2020.
- “In Pursuit of the Holy Grail of Natural Language Understanding: Past, Present and Future”
 - The Workshop on Progress Towards the Holy Grail, Conference on Constraint Programming (CP), 2019.
- “Natural Language Understanding with Indirect Supervision”
 - University of Arizona, 2019.
 - University of Maryland - Baltimore County, 2019.
 - Carnegie Mellon University - Language Technologies Institute, 2019.
 - Allen Institute for Artificial Intelligence, 2019.
- “Reasoning-Driven Question Answering”
 - Georgetown NLP seminar, 2018.
 - Stanford NLP seminar, 2018.
 - Yale NLP seminar, 2018.

- “Question Answering as Global Reasoning over Semantic Abstractions”
 - New York University, NLP Seminar, 2018.
 - Mid-Atlantic Student Colloquium on Speech, Language and Learning, 2018.
- “Question Answering via Integer Programming over Semi-Structured Knowledge”
 - Midwest Speech and Language Days, TTIC, 2017.
 - Microsoft, Redmond, 2016.

Teaching

As a guest lecturer

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| Fall 2018 | <i>Machine Learning</i> - Instructor: Prof. Dan Roth |
| Spring 2018 | <i>Machine Learning</i> - Instructor: Prof. Dan Roth |
| Spring, 2016 | <i>Machine Learning</i> - Instructor: Prof. Dan Roth |
| Fall, 2015 | <i>Machine Learning</i> - Instructor: Prof. Dan Roth |

As a teaching assistant

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| Fall, 2015 | <i>Machine Learning</i> - Instructor: Prof. Dan Roth |
| Spring, 2013 | <i>Fundamental Algorithms</i> - Instructor: Prof. Jeff Erickson |
| Spring, 2012 | <i>Fundamental Algorithms</i> - Instructor: Prof. Sarel Har-Peled, and Prof. Alexandra Kolla |
| Spring, 2012 | <i>Digital Signal Processing</i> - Instructor: Prof. Hamid Sheikhzadeh Nadjar |
| Spring, 2012 | <i>Probability and Statistics (I)</i> - Instructor: Prof. Gholamreza Moradi |
| Fall, 2011 | <i>Foundations of Programming I (C++)</i> - Instructor: Prof. Bahram Taheri |
| Spring, 2011 | <i>Foundations of Programming II (C++)</i> - Instructor: Prof. Bahram Taheri |

Community Involvement and Outreach

- *Co-Chair:*
 - 2019 Student Research Workshop, ACL.
- *Area Chair:*
 - 2021 EACL, NAACL, ACL-IJCNLP.
 - 2019 ACL, EMNLP.
- *Senior Program Committee:*
 - 2021 IJCAI, AAAI.
 - 2020 IJCAI-PRICAI.
 - 2019 IJCAI, NourIPS, AAAI.
- *Program Committee:*
 - 2021 ICLR.
 - 2020 EMNLP, KR2ML.
 - 2019 ACL, NAACL, AAAI, CoNLL.
 - 2018 NAACL, AAAI, COLING, LREC.
 - 2017 AAAI, CoNLL.

- *Technical Committee:*
2009 AUTCUP (2D Soccer Simulation League).
- *Student Volunteer:*
2018 NAACL.
2016 IJCAI.
- *Organizer:*
2014–2016 Artificial Intelligence and Information Systems (AIIS) seminars at UIUC.
2013–2015 AI reading group at UIUC.
- *Member:*
2018–2019 Penn/Wharton Venture Initiation Program (VIP-C).
2017–now Association for Computational Linguistics (ACL).
2011–now *Student Member*, Institute of Electrical and Electronics Engineers (IEEE).
- *Volunteer:*
2020 – now Volunteer on [skypeascientist.com](https://www.skypeascientist.com); lecturing elementary student kids about AI.
2017 Tech it Out Philly: teaching basics of web-design to public high-school students.