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] J. Zhao, D. Khashabi, T. Khot, A. Sabharwal, and K.-W. Chang.
"Ethical-Advice Taker: Do Language Models Understand Natural Language Interventions?"
In: *Annual Meeting of the Association for Computational Linguistics and the International Joint Conference on Natural Language Processing (***ACL-IJCNLP***)*.
2021.

[2] T. Khot, D. Khashabi, K. Richardson, P. Clark, and A. Sabharwal.
"Text Modular Networks: Learning to Decompose Tasksin the Language of Existing Models".
In: *Conference of the North American Chapter of the Association for Computational Linguistics (***NAACL***)*.
2021.

[3] D. Khashabi et al.
"ParsiNLU: A Suite of Language Understanding Challenges for Persian".
In: *Transactions of the Association for Computational Linguistics (***TACL***)*.
2021.

[4] 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.

[5] P. Clark et al.
"From 'F' to 'A'on the NY Regents Science Exams: An Overview of the Aristo Project".
In: *AI Magazine* 41.4 (2020), pp. 39–53.

[6] 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.

[7] 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.

[8] M. Gardner et al.
"Evaluating Models' Local Decision Boundaries via Contrast Sets".
In: *Conference on Empirical Methods in Natural Language Processing (***EMNLP***) - Findings*.
2020.

[9] 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.

[10] 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.

[11] 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.

[12] 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.

[13] 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.

[14] 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.

[15] 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.

[16] 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.

[17] 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.

[18] D. Khashabi et al.
"CogCompNLP: Your Swiss Army Knife for NLP".
In: *11th Language Resources and Evaluation Conference (LREC)*.
2018.

[19] 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.

[20] 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.

[21] 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.

[22] 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.

[23] 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.

[24] 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.

[25] K. Quanrud and D. Khashabi.
"Online Learning with Adversarial Delays".
In: *Proceedings of the 28th International Conference on Neural Information Processing Systems (**NeurIPS**)*.
2015.

[26] 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.

[27] 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.

[28] 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

[29] 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.

[30] 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.

Dissertations

[31] D. Khashabi.
"Reasoning-Driven Question-Answering for Natural Language Understanding".
PhD thesis. University of Pennsylvania, 2019.

Patents

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

Mentorship

2021	Swaroop Mishra, Project: *Learning from Instructions*, Allen Institute for AI
2020-2021	Jieyu Zhao, Project: *Natural-Language Interventions of QA Models* [1], Allen Institute for AI
2020	Tao Li, Project: *Social Stereotypes in Language-Models* [6], Allen Institute for AI
2018-2019	Sihao Chen, Project: *Perspective Discovery* [15, 14], Univ. of Pennsylvania
2016-2018	Ben Zhou, Project: *Unsupervised Entity Typing* [16], Univ. of Illinois, Urbana-Champaign
2017-2018	Angela Sun, Salaar Kohari, Zheng Tian, Senior Project: *CoLabel*, Univ. of Pennsylvania
2016-2017	Guanheng Luo, Project: *CogComp-NLPy*, University of Illinois, Urbana-Champaign
2014-2015	Josh Camp, Paul Gibbons, Ryan Kelch, Deepak Shine, Dhruv Vajpeyi, Project: *Open-Eval* (Senior Project), University of Illinois, Urbana-Champaign
2013-2014	Tianxiao Zhang, *Experiments on Recursive Neural Networks for Textual Entailment*

Invited Talks

- *"Progress in the Breadth: Broadening the Scope of Language Understanding"*
  - University of Glasgow, IR seminar, 2021.
  - IPM Institute For Research In Fundamental Sciences, AI seminar, 2021.
- *"Leave No Questions Behind! Broadening the Scope of Machine Comprehension"*
  - UCLA, Big Data and ML seminar, 2021
  - USC, NLP seminars, 2021.
- *"Unify and Conquer: Towards a Unified View of Machine Comprehension"*
  - Tel Aviv University, NLP seminar, 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"*
  - 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

Fall 2018	*Machine Learning* - Instructor: Prof. Dan Roth
Spring 2018	*Machine Learning* - Instructor: Prof. Dan Roth
Spring, 2016	*Machine Learning* - Instructor: Prof. Dan Roth
Fall, 2015	*Machine Learning* - Instructor: Prof. Dan Roth

As a teaching assistant

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

Community Involvement and Outreach

- *Co-Chair*:
  - 2019 Student Research Workshop at 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; lecturing elementary student kids about AI.
2017	Tech it Out Philly: teaching basics of web-design to public high-school students.