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)

Employment Experience

2019-now	*Post-doctoral fellow*, Allen Institute for AI, 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 AI, Seattle, WA
Summer, 2015	*Research Intern*, Allen Institute for AI, 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

Awards and Grants

2022 Research funding gift from Allen Institute for AI (pending)

2020 Young Researcher attendee for the 8th Heidelberg Laureate Forum

2019 Allen Institute for AI Young Investigator Award

2018 Wharton Venture Initiation Award ($\$20k$ cloud credit)

2008 Ranked 172th (top 0.1%) at the national university entrance exam, among $330k$ participants

Publications

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

Journal Publications

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

[3] 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.

[4] 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).

Conference Publications

[5] D. Khashabi, A. Ng, T. Khot, A. Sabharwal, H. Hajishirzi, and C. Callison-Burch.
"GooAQ: Open Question Answering with Diverse Answer Types".
In: *Conference on Empirical Methods in Natural Language Processing* ***(EMNLP)*** *- Findings*.
2021.

[6] 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* ***(ACL)*** *- Findings*.
2021.

[7] 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.

[8] 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.

[9] 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.

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

[11] 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.

[12] 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.

[13] 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.

[14] 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.

[15] 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.

[16] 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.

[17] 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.

[19] 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.

[20] 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.

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

[22] D. Khashabi, T. Khot, A. Sabharwal, and D. Roth.
"Question Answering as Global Reasoning over Semantic Abstractions".
In: *Proceedings of the Conference on Artificial Intelligence* ***(AAAI)***.
2018.

[23] 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.

[24] 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 International Joint Conference on Artificial Intelligence* ***(IJCAI)***.
2016.

[25] 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.

[26] H. Peng, D. Khashabi, and D. Roth.
"Solving Hard Coreference Problems".
In: *Conference of the North American Chapter of the Association for Computational Linguistics* ***(NAACL)***.
2015.

[27] 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 Conference on Artificial Intelligence* ***(AAAI)***.
2016.

[28] 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.

[29] K. Quanrud and D. Khashabi.
"Online Learning with Adversarial Delays".
In: *Proceedings of the Conference on Advances in Neural Information Processing Systems* ***(NourIPS)***.
2015.

[30] 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

[31] 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.
2017.

[32] Z. Fei, D. Khashabi, H. Peng, H. Wu, and D. Roth.
Illinois-Profiler: Knowledge Schemas at Scale.
2015.

Dissertations

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

Patents

[34] 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

Mentored 15 students (10 bachelor's, 5 graduate's); these projects have let to 8 papers accepted to top-tier conferences and 3 submissions under review.

2021	Lianhui Qin, Project: *Differentiable Prompt Generation*, Allen Institute for AI
2021	Kelvin Luu, Project: *Temporal Drift of Language Models*, Allen Institute for AI
2021	Swaroop Mishra, Project: *Learning from Instructions*, Allen Institute for AI
2020-2021	Jieyu Zhao, Project: *Natural-Language Interventions of QA Models* [6], Allen Institute for AI
2020	Tao Li, Project: *Social Stereotypes in Language-Models* [8], Allen Institute for AI
2018-2019	Sihao Chen, Project: *Perspective Discovery* [17, 16], University of Pennsylvania
2016-2019	Ben Zhou, Project: *Unsupervised Entity Typing* [20] and *Temporal Commonsense Reasoning* [15, 14], 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

Invited Talks

- *"Modern NLP: Breakthroughs and Uphill Battles"*
  - University of Tehran, NLP seminar, 2021.
- *"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 seminar, 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 AI, 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

- *Organizer*: Student Research Workshop at ACL (2019), AI and Information Systems (AIIS) seminar (at UIUC) (2014-2016), AI reading group (at UIUC) (2013-2015)
- *Chair*: Area Chair at EMNLP (2019), Student Volunteer Chair at NAACL (2022)
- *Action Editor*: ACL Rolling Reviews (2021)
- *Program Committee*: AAAI (2017, 2018, 2019, 2021), NourIPS (2019), IJCAI (2021, 2020, 2019), ACL (2019, 2020), NAACL (2019, 2018), EMNLP (2020), KRML (2020), TACL (2020, 2021), ICLR (2021), ACL Rolling Review (2021)

References

Prof. Yejin Choi yejin@cs.washington.edu	*Brett Helsel Professor, School of Computer Science, University of Washington* *Research Manager, Allen Institute for AI*
Prof. Oren Etzioni orene@allenai.org	*Chief Executive Officer, Allen Institute for for AI* *Professor of Computer Science, University of Washington*
Prof. Hannaneh Hajishirzi hannaneh@cs.washington.edu	*Assistant Professor, School of Computer Science, University of Washington* *Research Manager, Allen Institute for AI*
Prof. Dan Roth danroth@cis.upenn.edu	*Eduardo D. Glandt Distinguished Professor* *Computer and Information Sciences, University of Pennsylvania*
Dr. Ashish Sabharawal ashishs@allenai.org	*Research Manager, Allen Institute for AI*