

# Yonatan Bisk

(Grounded) Natural Language Processing  
Computer Science

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## Positions

- 2020 **Assistant Professor**, *Carnegie Mellon University*  
Language Technologies Institute & Robotics Institute
- ... **Visiting Researcher**, *Microsoft Research* w/ *Jianfeng Gao*
- 2019 **Postdoctoral Scholar**  
University of Washington & Allen Institute for Artificial Intelligence w/ *Yejin Choi*  
Information Sciences Institute, University of Southern California w/ *Daniel Marcu*

## Education

- 2015 **PhD in Computer Science**, *The University of Illinois at Urbana-Champaign*,  
Thesis: **Unsupervised Grammar Induction with Combinatory Categorical Grammars**  
Advisor: Julia Hockenmaier  
Committee: Jason Eisner, Dan Roth, ChengXiang Zhai
- 2009 **BS in Computer Science**, *The University of Texas at Austin*, Turing Scholar,  
Thesis: The Necessity of Separating Control and Logic When Grounding Language using Neuroevolution  
Advisor: Risto Miikkulainen Second Reader: Raymond Mooney

## Conference and Journal Publications

- 2019 **Defending Against Neural Fake News**  
Rowan Zellers, Ari Holtzman, Hannah Rashkin, [Yonatan Bisk](#), Ali Farhadi, Franziska Roesner, & Yejin Choi,  
*Thirty-third Conference on Neural Information Processing Systems (NeurIPS)*
- **Efficient Navigation with Language Pre-training and Stochastic Sampling**  
Xiujuan Li, Chunyuan Li, Qiaolin Xia, [Yonatan Bisk](#), Asli Celikyilmaz, Jianfeng Gao, Noah A. Smith & Yejin Choi,  
*Conference on Empirical Methods in Natural Language Processing and 9th International Joint Conference on Natural Language Processing (EMNLP-IJCNLP)*
  - **Improving Robot Success Detection using Static Object Data**  
Rosario Scalise, Jesse Thomason, [Yonatan Bisk](#), and Siddhartha Srinivasa,  
*IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*
  - **Early Fusion for Goal Directed Robotic Vision**  
Aaron Walsman, [Yonatan Bisk](#), Saadia Gabriel, Dipendra Misra, Yoav Artzi, Yejin Choi, and Dieter Fox,  
*IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*
  - **HellaSwag: Can a Machine Really Finish Your Sentence?**  
Rowan Zellers, Ari Holtzman, [Yonatan Bisk](#), Ali Farhadi and Yejin Choi,  
*Proc of the 2019 Conference of the Association for Computational Linguistics (ACL)*
  - **From Recognition to Cognition: Visual Commonsense Reasoning**  
Rowan Zellers, [Yonatan Bisk](#), Ali Farhadi and Yejin Choi,  
*The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Oral
  - **Tactical Rewind: Self-Correction via Backtracking in Vision-and-Language Navigation**  
Liyiming Ke, Xiujuan Li, [Yonatan Bisk](#), Ari Holtzman, Zhe Gan, Jingjing Liu, Jianfeng Gao, Yejin Choi and Siddhartha Srinivasa,  
*The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Oral
  - **Prospection: Interpretable Plans From Language By Predicting the Future**  
Chris Paxton, [Yonatan Bisk](#), Jesse Thomason, Arunkumar Byravan, and Dieter Fox,  
*International Conference on Robotics and Automation (ICRA)*
  - **Shifting the Baseline: Single Modality Performance on Visual Navigation & QA**  
Jesse Thomason, Daniel Gordon, and [Yonatan Bisk](#),  
*Proc of the 2019 Conference of the N. American Chapter of the Association for Computational Linguistics (Short)*

- **Benchmarking Hierarchical Script Knowledge**  
Yonatan Bisk, Jan Buys, Karl Pichotta, and Yejin Choi,  
*Proc of the 2019 Conference of the N. American Chapter of the Association for Computational Linguistics (Short)*, Oral
- **Character-based Surprisal as a Model of Human Reading in the Presence of Errors**  
Michael Hahn, Frank Keller, Yonatan Bisk, and Yonatan Belinkov,  
*The 41st Annual Meeting of the Cognitive Science Society*, Oral
- 2018 **SWAG: A Large-Scale Adversarial Dataset for Grounded Commonsense Inference**  
Rowan Zellers, Yonatan Bisk, Roy Schwartz and Yejin Choi,  
*Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, Oral
- **Synthetic and Natural Noise Both Break Neural Machine Translation**  
Yonatan Belinkov and Yonatan Bisk,  
*Proceedings of the 6th International Conference on Learning Representations (ICLR)*, Oral
- **Learning Interpretable Spatial Operations in a Rich 3D Blocks World**  
Yonatan Bisk, Kevin Shih, Yejin Choi and Daniel Marcu,  
*Proceedings of the Thirty-Second Conference on Artificial Intelligence (AAAI-18)*
- 2017 **Natural Language Inference from Multiple Premises**  
Alice Lai, Yonatan Bisk, and Julia Hockenmaier,  
*Proceedings of the Eighth International Joint Conference on Natural Language Processing*, Oral
- 2016 **Evaluating Induced CCG Parsers on Grounded Semantic Parsing**  
Yonatan Bisk, Siva Reddy, John Blitzer, Julia Hockenmaier and Mark Steedman,  
*Proceedings of the 2016 Conference on Empirical Methods in Natural Language Processing*, pp 2022 – 2027
- **Natural Language Communication with Robots**  
Yonatan Bisk, Deniz Yuret and Daniel Marcu,  
*Proceedings of the 2016 Conference of the North American Chapter of the Association for Computational Linguistics*, pp 751 – 761, Oral
- **Supertagging With LSTMs**  
Ashish Vaswani, Yonatan Bisk, Kenji Sagae and Ryan Musa,  
*Proceedings of the 2016 Conference of the North American Chapter of the Association for Computational Linguistics (Short Papers)*, pp 232–237, Oral
- 2015 **Probing the Linguistic Strengths and Limitations of Unsupervised Grammar Induction**  
Yonatan Bisk and Julia Hockenmaier,  
*Proc of the 53rd Annual Meeting of the Association for Computational Linguistics and the 7th International Joint Conference on Natural Language Processing (Volume 1: Long Papers)*, pp 1395 – 1404, Oral
- **Labeled Grammar Induction with Minimal Supervision**  
Yonatan Bisk, Christos Christodoulopoulos and Julia Hockenmaier,  
*Proceedings of the 53rd Annual Meeting of the Association for Computational Linguistics and the 7th International Joint Conference on Natural Language Processing (Volume 2: Short Papers)*, pp 870 – 876
- 2013 **An HDP Model for Inducing Combinatory Categorical Grammars**  
Yonatan Bisk and Julia Hockenmaier,  
*Transactions of the Association for Computational Linguistics*, Vol 1, pp 75-88
- 2012 **Simple Robust Grammar Induction with Combinatory Categorical Grammars**  
Yonatan Bisk and Julia Hockenmaier,  
*Proceedings of the Twenty-Sixth Conference on Artificial Intelligence (AAAI-12)*, pp 1643–1649
- **Document-Topic Hierarchies from Document Graphs**  
Tim Weneringer, Yonatan Bisk and Jiawei Han,  
*Proceedings of the 21st ACM International Conference on Information and Knowledge Management (CIKM)*
- 2010 **Normal-form parsing for Combinatory Categorical Grammars with generalized composition and type-raising**  
Julia Hockenmaier and Yonatan Bisk,  
*Proceedings of the 23rd International Conference on Computational Linguistics (Coling 2010)*, pp 465–473

## Workshop Publications & Tech Reports

- 2018 **Inducing Grammars with and for Neural Machine Translation**  
Ke Tran and Yonatan Bisk,  
*Workshop on Neural Machine Translation*, Best paper - Oral
- **Bridging HMMs and RNNs Through Architectural Transformations**  
Jan Buys, Yonatan Bisk, and Yejin Choi,  
*Interpretability and Robustness in Audio, Speech, and Language Workshop @ NeurIPS*

- **CHALET: Cornell House Agent Learning Environment**  
Claudia Yan, Dipendra Misra, Andrew Bennet, Aaron Walsman, Yonatan Bisk and Yoav Artzi, *ArXiv*
- 2016 **Unsupervised Neural Hidden Markov Models**  
Ke Tran, Yonatan Bisk, Ashish Vaswani, Daniel Marcu and Kevin Knight,  
*Proceedings of the Workshop on Structured Prediction for NLP*, pp 63–71, Oral
- **Towards a Dataset for Human Computer Communication via Grounded Language Acquisition**  
Yonatan Bisk, Daniel Marcu and William Wong,  
*Proceedings of the AAAI 2016 Workshop on Symbiotic Cognitive Systems*, pp 729 – 732
- 2012 **Induction of Linguistic Structure with Combinatory Categorical Grammars**  
Yonatan Bisk and Julia Hockenmaier,  
*NAACL HLT Workshop on Inducing Linguistic Structure*, pp 90–95

## Conference Organization / Area-Chair

- 2019 **Area Chair**, *Vision Robotics Multimodal Grounding and Speech*, Association for Computational Linguistics
  - **Workshop Org**, *Workshop on Spatial Language Understanding and Grounded communication for Robotics*, North American Chapter of the Association for Computational Linguistics
- 2018 **Conference Org**, *Social Media Chair*, North American Chapter of the Association for Computational Linguistics
  - **Area Chair**, International Conference on Computational Linguistics
  - **Workshop Org**, *Generalization in the Age of Deep Learning*, North American Chapter of the Association for Computational Linguistics
  - **Workshop Org**, *Wordplay: Reinforcement and Language Learning in Text-Based Games*, NeurIPS
- 2017 **Conference Org**, *Student Scholarship Chair and Student Volunteer Coordinator*, Conference on Empirical Methods in Natural Language Processing
  - **Workshop Org**, *Language Grounding for Robotics*, Conference of the Association for Computational Linguistics
- 2016 **Area-Chair**, *Semantic Parsing and Semantic Role Labeling*, Conference on Lexical and Computational Semantics (\*SEM)

## Reviewer

NLP	<b>ACL</b>	Association for Computational Linguistics,	2017, 2018
	<b>CL</b>	Computational Linguistics Journal,	2017
	<b>CoLing</b>	International Conference on Computational Linguistics,	2016
	<b>CoNLL</b>	Conference on Computational Natural Language Learning,	2016 – 2018
	<b>EACL</b>	European Chapter of the Association for Computational Linguistics,	2014, 2017
	<b>EMNLP</b>	Empirical Methods in Natural Language Processing,	2013 – 2019
	<b>IJCNLP</b>	International Joint Conference on Natural Language Processing,	2017
	<b>NAACL</b>	N. American Chapter of the Association for Computational Ling,	2016 – 2019
	<b>NLE</b>	Natural Language Engineering Journal,	2016
Robo	<b>TACL</b>	Transactions of the Assoc. for Computational Linguistics,	2019
	<b>CoRL</b>	Conference on Robot Learning,	2019
	<b>ICRA</b>	International Conference on Robotics and Automation,	2019
	<b>IJRR</b>	International Journal of Robotics Research,	2017
	<b>IROS</b>	IEEE/RSJ International Conference on Intelligent Robots and Systems,	2019
	<b>RA-L</b>	IEEE Robotics and Automation Letters,	2019
AI/ML	<b>AAAI</b>	Association for the Advancement of Artificial Intelligence,	2018
	<b>ICLR</b>	International Conference on Learning Representations,	2019
	<b>ICML</b>	International Conference on Machine Learning,	2019

## Diversity and Inclusion

- 2018 **ACM Council on Diversity & Inclusion**, Investigating and initiating institutional change within ACM on behalf of underrepresented groups., 1yr
- **Grace Hopper PC member**, Review submissions to AI Technical Track, 1yr
- 2016 **NCWIT Collegiate Award**, Review applications for the National Center for Women & Information Technology's Collegiate Award honoring college women, ISI Ongoing
- 2009 **NCWIT Aspirations in Computing**, Review applications for the National Center for Women & Information Technology's Award for Aspirations in Computing which supports high-school girls interested in CS, UIUC, ISI Ongoing
- **Tech Junket/Women in CS**, CS outreach (presentations and recruitment) for local Urbana-Champaign pre-college students, UIUC 2yrs
  
- 2008 **Freshman Research Mentor**, Mentored students to perform research, UTexas 1yr
- **First Bytes**, Helped organize a summer camp for girls interested in CS, UTexas
- **Co-Founded Breakfast Bytes**, Professor talks for pre-college students, UTexas 1yr
- **CS Roadshow**, CS presentations at Austin middle and high schools, UTexas 1yr

## Invitations and Talks

- 2018 **Colloquium Talk**, *Northwest NLP*
- 2017 **Invited Talk**, *University of Notre Dame NLP Seminar*
- Invited Talk**, *University of California, Irvine AI/ML Seminar*
- Invited Talk**, *Pacific Northwest National Laboratory*
- 2016 **Invited Poster**, *The Impact of Computing in Our Physical World session of the CRA's Computing Community Consortium (CCC) Symposium on Computing Research*
- 2015 **Colloquium Talk**, *Toyota Tech. Inst. of Chicago's Midwest Speech & Language Days*
- 2013 **Colloquium Talk**, *Toyota Tech. Inst. of Chicago's Midwest Speech & Language Days*

## Community Service

- 2017 **Association for Computing Machinery Future of Computing Academy Member**, "... a platform that enables the next generation of researchers, ... to develop a coherent and influential voice that addresses challenging issues facing the field and society in general", Ongoing
- **NSF review panel**, Scholarships in the Division of Undergraduate Education
- **Intel International Science and Engineering Fair**, Pre-college science competition for the Assoc. for the Advancement of Artificial Intelligence (AAAI)

## University Service

- 2017 **RoboNLP Reading Groups**, Reading group for students across robotics and NLP to learn and collaborate. 2yrs
- **Organize UW NLP Seminar**, Coordinate with professors to invite and host speakers to the department 2yrs
- 2015 **USC Postdoc Association Representative**, 1yr
- 2013 **Fellowships, Assistantships, and Admissions Committee**, Decide which students are admitted to the CS PhD and MS programs 1yr
- **Departmental Graduate Academic Council**, Vet departmental seminars and policies in addition to creating new useful resources and seminars for students 1yr
- **Departmental Grievance Committee**, Evaluate validity of complaints filed by students against professors 2yrs

- 2011 **Engineering Graduate Student Advisory Committee**,  
Advise the engineering dean on graduate matters and organize events for students 1yr
- 2010 **Organize Artificial Intelligence & Information Systems Seminar**,  
Coordinate with professors to invite and host speakers to the department 5yrs
- 2009 **PhD Ambassador & Mentor**, Introduce students to the department and graduate school both during visits and adjustment to the department upon entry 4yrs

## Awards, Honors, and Fellowships

- 2018 **Finalist, UW Postdoc Mentoring Award**, University of Washington
- 2014 **Andrew and Shana Laursen Fellow**, University of Illinois
- 2013 **State Farm Companies Foundation Doctoral Scholarship**, University of Illinois
- 2013 **Graduate Student Outstanding Ambassador Award**, University of Illinois
- 2012 **Cognitive Science / Artificial Intelligence Award**, Beckman Institute
- 2011 **Honorable Mention for NSF Graduate Research Fellowship Program**
- 2009 **Honorable Mention for NSF Graduate Research Fellowship Program**
- 2008 **College of Natural Science Summer Research Fellowship**, UTexas
- 2007 **Departmental Summer Research Fellowship**, UTexas

## Teaching

- 2014 **Teaching Assistant**, Graduate Machine Learning in NLP (# Students: 27), UIUC
- 2011 **Teaching Assistant**, Artificial Intelligence (# Students: 97), UIUC
- 2010 **Teaching Assistant**, Artificial Intelligence (# Students: 63), UIUC

## Industry Employment

- 2014 **NLP Research Intern**, *Google, Inc.*, Mountain View, CA  
Informing grammar induction with semantics under John Blitzer
- 2013 **NLP Research Intern**, *Google, Inc.*, Mountain View, CA  
Leveraged syntactic information in question answering with John Blitzer
- 2009 **iPhone Development Intern**, *Apple, Inc.*, Cupertino, CA  
Create robust metrics for evaluating keyboard and auto-correction performance
- 2006 **SQL Server Intern**, *Microsoft Corporation*, Redmond, WA  
Created data-mining ribbon for Excel 2007 and UI test cases for SQL server

## References

### Yejin Choi,

*Associate Prof at the University of Washington and  
Senior Research Manager at the Allen Instit for AI,*

[yejin@cs.washington.edu](mailto:yejin@cs.washington.edu)

### Dieter Fox,

*Professor at the University of Washington and  
Senior Director of Robotics Research at Nvidia,*

[fox@cs.washington.edu](mailto:fox@cs.washington.edu)

### Julia Hockenmaier,

*Associate Prof at the University of Illinois at Urbana-Champaign,*

[juliahmr@illinois.edu](mailto:juliahmr@illinois.edu)

### Kevin Knight,

*Prof at the University of Southern California  
Chief Scientist for NLP at Didi Chuxing,*

[kevin.crawford.knight@gmail.com](mailto:kevin.crawford.knight@gmail.com)