Yonatan Bisk

(Grounded) Natural Language Processing
Computer Science

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Positions

2020	**Assistant Professor**, *Carnegie Mellon University*	
	Language Technologies Institute (primary) & Robotics Institute (courtesy)	
...	**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

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Education

2015 PhD in Computer Science, *The University of Illinois at Urbana-Champaign*,
Thesis: **Unsupervised Grammar Induction with Combinatory Categorial 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

2020 Experience Grounds Language
Yonatan Bisk, Ari Holtzman, Jesse Thomason, Jacob Andreas, Yoshua Bengio, Joyce Chai, Mirella Lapata, Angeliki Lazaridou, Jonathan May, Aleksandr Nisnevich, Nicolas Pinto, Joseph Turian,
Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP)

– **RMM: A Recursive Mental Model for Dialog Navigation**
Homero Roman Roman, Yonatan Bisk, Jesse Thomason, Asli Celikyilmaz, Jianfeng Gao,
Findings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP-Findings)

– **The Return of Lexical Dependencies: Neural Lexicalized PCFGs**
Hao Zhu, Yonatan Bisk, & Graham Neubig,
Transactions of the Association for Computational Linguistics

– **ALFRED: A Benchmark for Interpreting Grounded Instructions for Everyday Tasks**
Mohit Shridhar, Jesse Thomason, Daniel Gordon, Yonatan Bisk, Winson Han, Roozbeh Mottaghi, Luke Zettlemoyer & Dieter Fox,
The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)

– **PIQA: Reasoning about Physical Commonsense in Natural Language**
Yonatan Bisk, Rowan Zellers, Ronan Le Bras, Jianfeng Gao & Yejin Choi,
Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-20), (Oral)

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)

– **Robust Navigation with Language Pre-training and Stochastic Sampling**
Xiujun 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), (RoboCup Best Paper finalist)

- **HellaSwag: Can a Machine Really Finish Your Sentence?**
  Rowan Zellers, Ari Holtzman, <u>Yonatan Bisk</u>, 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, <u>Yonatan Bisk</u>, 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, Xiujun Li, <u>Yonatan Bisk</u>, 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, <u>Yonatan Bisk</u>, 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 <u>Yonatan Bisk</u>,
  Conference of the North American Chapter of the Association for Computational Linguistics (Short)

- **Benchmarking Hierarchical Script Knowledge**
  <u>Yonatan Bisk</u>, Jan Buys, Karl Pichotta, and Yejin Choi,
  Conference of the North 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, <u>Yonatan Bisk</u>, 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, <u>Yonatan Bisk</u>, 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 <u>Yonatan Bisk</u>,
  Proceedings of the 6th International Conference on Learning Representations (ICLR), Oral

- **Learning Interpretable Spatial Operations in a Rich 3D Blocks World**
  <u>Yonatan Bisk</u>, 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, <u>Yonatan Bisk</u>, and Julia Hockenmaier,
  Proceedings of the Eighth International Joint Conference on Natural Language Processing, Oral

2016 **Evaluating Induced CCG Parsers on Grounded Semantic Parsing**
  <u>Yonatan Bisk</u>, 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**
  <u>Yonatan Bisk</u>, 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, <u>Yonatan Bisk</u>, 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**
  <u>Yonatan Bisk</u> 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**
  <u>Yonatan Bisk</u>, 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 Categorial Grammars**
  <u>Yonatan Bisk</u> and Julia Hockenmaier,
  Transactions of the Association for Computational Linguistics, Vol 1, pp 75-88

2012 **Simple Robust Grammar Induction with Combinatory Categorial Grammars**
  <u>Yonatan Bisk</u> and Julia Hockenmaier,
  Proceedings of the Twenty-Sixth Conference on Artificial Intelligence (AAAI-12), pp 1643–1649

- **Document-Topic Hierarchies from Document Graphs**
  Tim Weninger, <u>Yonatan Bisk</u> and Jiawei Han,
  Proceedings of the 21st ACM International Conference on Information and Knowledge Management (CIKM)

2010 **Normal-form parsing for Combinatory Categorial Grammars with generalized composition and type-raising**
  Julia Hockenmaier and <u>Yonatan Bisk</u>,
  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 <u>Yonatan Bisk</u>,
  Workshop on Neural Machine Translation, Best paper - Oral

– **Bridging HMMs and RNNs Through Architectural Transformations**
  Jan Buys, <u>Yonatan Bisk</u>, and Yejin Choi,
  Interpretability and Robustness in Audio, Speech, and Language Workshop @ NeurIPS

– **CHALET: Cornell House Agent Learning Environment**
  Claudia Yan, Dipendra Misra, Andrew Bennnett, Aaron Walsman, <u>Yonatan Bisk</u> and Yoav Artzi,
  ArXiv

2016 **Unsupervised Neural Hidden Markov Models**
  Ke Tran, <u>Yonatan Bisk</u>, 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**
  <u>Yonatan Bisk</u>, 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 Categorial Grammars**
  <u>Yonatan Bisk</u> and Julia Hockenmaier,
  NAACL HLT Workshop on Inducing Linguistic Structure, pp 90–95

Funding and Awards

2020 **Facebook RFP**, *Learning Dynamic Multimodal Inference for On-Device VQA*,
  Co-PI Emma Strubell, Sept 2020 – May 2021, $75K

Students

PhD **Hao Zhu**, *Unsupervised structure induction and Theory of Mind*, 2019 –
PhD **Jared Fernandez**, *Efficient Multimodal Models*, 2020 –
MLT **Josh Zhanson**, *Embodied Agents*, 2020 –
MLT **Yingshan Chang**, *Visual Coref*, 2020 –

Organization (Workshops and Conference)

2020 **Workshop**, *Embodied Vision, Actions & Language Workshop*,
  European Conference on Computer Vision

– **Workshop**, *Workshop on Dataset Curation and Security*,
  NeurIPS

2019 **Workshop**, *Spatial Language Understanding and Grounded communication for Robotics*,
  North American Chapter of the Association for Computational Linguistics

2018 **Conference**, *Social Media Chair*,
  North American Chapter of the Association for Computational Linguistics

– **Workshop**, *Generalization in the Age of Deep Learning*,
  North American Chapter of the Association for Computational Linguistics

– **Workshop**, *Wordplay: Reinformcent and Language Learning in Text-Based Games*, NeurIPS

2017 **Conference**, *Student Scholarship Chair and Student Volunteer Coordinator*,
  Conference on Empirical Methods in Natural Language Processing

– **Workshop**, *Language Grounding for Robotics*,
Conference of the Association for Computational Linguistics

Area Chair

2021	**International Conference on Learning Representations**
2020	**Association for Computational Linguistics**, *Language Grounding to Vision, Robotics and Beyond*
–	**Neural Information Processing Systems (NeurIPS)**
–	**Asia-Pacific chapter of the Association for Computational Linguistics**
2019	**Association for Computational Linguistics**, *Vision, Robotics, Multimodal Grounding, and Speech*
2018	**International Conference on Computational Linguistics**
2016	**Conference on Lexical and Computational Semantics (*SEM)**, *Sem. Parsing and Role Labeling*

Reviewer

NLP	**ACL**	Association for Computational Linguistics,	*2017, 2018*
	CL	Computational Linguistics Journal,	*2017, standing*
	CoLing	International Conference on Computational Linguistics,	*2016*
	CoNLL	Conference on Computational Natural Language Learning,	*2016 – 2018*
	EACL	European Chapter of the Association for Computational Linguistics,	*2014, 2017, 2020*
	EMNLP	Empirical Methods in Natural Language Processing,	*2013 – 2020*
	IJCNLP	International Joint Conference on Natural Language Processing,	*2017*
	NAACL	N. American Chapter of the Association for Computational Ling,	*2016 – 2019*
	NLE	Natural Language Engineering Journal,	*2016*
	***SEM**	Joint Conference on Lexical and Computational Semantics,	*2020*
	TACL	Transactions of the Assoc. for Computational Linguistics,	*2019*
Robo	**CoRL**	Conference on Robot Learning,	*2019 – 2020*
	HRI	Human Robot Interaction,	*2020*
	ICRA	International Conference on Robotics and Automation,	*2019*
	IJRR	International Journal of Robotics Research,	*2017*
	IROS	IEEE/RSJ International Conference on Intelligent Robots and Systems,	*2019*
	RA-L	IEEE Robotics and Automation Letters,	*2019*
AI/ML	**AAAI**	Association for the Advancement of Artificial Intelligence,	*2018, 2021*
	ICLR	International Conference on Learning Representations,	*2019 – 2020*
	ICML	International Conference on Machine Learning,	*2019*
	IJCAI	International Joint Conference on Artificial Intelligence,	*2019*
	NeurIPS	Neural Information Processing Systems,	*2018 – 2019*
CV	**CVPR**	Computer Vision and Pattern Recognition,	*2020*

Diversity and Inclusion

2019	**CrashCourse AI**, Educational YouTube series targeted at high-school age viewers. Hosted by Jabril Ashe. Co-Written with Lana Yarosh and Tim Weninger, *1yr*
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 *3yrs*

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 *6yrs*

– **Tech Junket/Women in CS**, Outreach 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

2020 **The 2nd Workshop Beyond Vision and Language: Integrating Real-world Knowledge**, *CoLing*
Forum for AI – The University of Texas at Austin
Cornell Learning Machines seminar

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*