Yonatan Bisk

(Grounded) Natural Language Processing
Computer Science

✉ *ybisk@cs.cmu.edu*

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

---
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   **The Return of Lexical Dependencies: Neural Lexicalized PCFGs**
Hao Zhu, <u>Yonatan Bisk</u>, & 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, <u>Yonatan Bisk</u>, 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**
<u>Yonatan Bisk</u>, 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, <u>Yonatan Bisk</u>, 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, <u>Yonatan Bisk</u>, 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, <u>Yonatan Bisk</u>, and Siddhartha Srinivasa,
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

–   **Early Fusion for Goal Directed Robotic Vision**
Aaron Walsman, <u>Yonatan Bisk</u>, 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*