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

Students

PhD	**Hao Zhu**, *Unsupervised structure induction and Theory of Mind*,	2019 –
PhD	**Jared Fernandez**, *Efficient Multimodal Models*,	2020 –
MLT	**Josh Zhanson**, *Visual Representations for Embodied Agents*,	2020 –
MLT	**Yingshan Chang**, *Multimodal Visual Reasoning*,	2020 –
PhD	**Vidhi Jain**, *Hierarchical RL & Control*,	2021 –
PhD	**Tiffany Min**, *Knowledge for Embodied agents*,	2021 –

Conference and Journal Publications

2021 Few-shot Language Coordination by Modeling Theory of Mind
Hao Zhu, Graham Neubig, Yonatan Bisk,
The Thirty-eighth International Conference on Machine Learning

2021 Grounding 'Grounding' in NLP
Khyathi Raghavi Chandu, Yonatan Bisk, Alan W Black,
Findings of The 2021 Conference of the Association for Computational Linguistics

2021 An Empirical Study on the Generalization Power of Neural Representations Learned via Visual Guessing Games
Alessandro Suglia, Yonatan Bisk, Ioannis Konstas, Antonio Vergari, Emanuele Bastianelli, Andrea Vanzo, Oliver Lemon,
The 2021 Conference of the European Chapter of the Association for Computational Linguistics, (Oral)

2021 Knowledge-driven Data Construction for Zero-shot Evaluation in Commonsense Question Answering
Kaixin Ma, Filip Ilievski, Jonathan Francis, Yonatan Bisk, Eric Nyberg, Alessandro Oltramari,
35th AAAI Conference on Artificial Intelligence

2021 ALFWorld: Aligning Text and Embodied Environments for Interactive Learning
Mohit Shridhar, Xingdi Yuan, Marc-Alexandre Côté, Yonatan Bisk, Adam Trischler, Matthew Hausknecht,
Proceedings of the International Conference on Learning Representations

2020 **Imagining Grounded Conceptual Representations from Perceptual Information in Situated Guessing Games**
Alessandro Suglia, Antonio Vergari, Ioannis Konstas, <u>Yonatan Bisk</u>, Emanuele Bastianelli, Andrea Vanzo, Oliver Lemon,
The 28th International Conference on Computational Linguistics, (Oral)

2020 **The Return of Lexical Dependencies: Neural Lexicalized PCFGs**
Hao Zhu, <u>Yonatan Bisk</u>, Graham Neubig,
Transactions of the Association for Computational Linguistics

2020 **Experience Grounds Language**
<u>Yonatan Bisk</u>, 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), (Oral)

2020 **RMM: A Recursive Mental Model for Dialog Navigation**
Homero Roman Roman, <u>Yonatan Bisk</u>, Jesse Thomason, Asli Celikyilmaz, Jianfeng Gao,
Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing: Findings

2020 **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)

2020 **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, (Oral)

2019 **Robust Navigation with Language Pretraining 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

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

2019 **Improving Robot Success Detection using Static Object Data**
Rosario Scalise, Jesse Thomason, <u>Yonatan Bisk</u>, Siddhartha Srinivasa,
Proceedings of the 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems

2019 **Early Fusion for Goal Directed Robotic Vision**
Aaron Walsman, <u>Yonatan Bisk</u>, Saadia Gabriel, Dipendra Misra, Yoav Artzi, Yejin Choi, Dieter Fox,
Proceedings of the 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems

2019 **HellaSwag: Can a Machine Really Finish Your Sentence?**
Rowan Zellers, Ari Holtzman, <u>Yonatan Bisk</u>, Ali Farhadi, Yejin Choi,
Proceedings of the Association for Computational Linguistics

2019 **From Recognition to Cognition: Visual Commonsense Reasoning**
Rowan Zellers, <u>Yonatan Bisk</u>, Ali Farhadi, Yejin Choi,
The IEEE Conference on Computer Vision and Pattern Recognition (CVPR), (Oral)

2019 **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, Siddhartha Srinivasa,
The IEEE Conference on Computer Vision and Pattern Recognition (CVPR), (Oral)

2019 **Prospection: Interpretable Plans From Language By Predicting the Future**
Chris Paxton, <u>Yonatan Bisk</u>, Jesse Thomason, Arunkumar Byravan, Dieter Fox,
Proceedings of the International Conference on Robotics and Automation (ICRA)

2019 **Shifting the Baseline: Single Modality Performance on Visual Navigation & QA**
Jesse Thomason, Daniel Gordon, <u>Yonatan Bisk</u>,
Proceedings of the Annual Conference of the North American Chapter of the Association for Computational Linguistics

2019 **Benchmarking Hierarchical Script Knowledge**
<u>Yonatan Bisk</u>, Jan Buys, Karl Pichotta, Yejin Choi,
Proceedings of the Annual Conference of the North American Chapter of the Association for Computational Linguistics, (Oral)

2019 **Character-based Surprisal as a Model of Reading Difficulty in the Presence of Errors**
Michael Hahn, Frank Keller, <u>Yonatan Bisk</u>, 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, Yejin Choi,
Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing (EMNLP), (Oral)

2018   **Synthetic and Natural Noise Both Break Neural Machine Translation**
Yonatan Belinkov, <u>Yonatan Bisk</u>,
Proceedings of the 6th International Conference on Learning Representations, (Oral)

2018   **Learning Interpretable Spatial Operations in a Rich 3D Blocks World**
<u>Yonatan Bisk</u>, Kevin Shih, Yejin Choi, 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>, Julia Hockenmaier,
Proceedings of the Eighth International Joint Conference on Natural Language Processing, (Oral)

2016   **Natural Language Communication with Robots**
<u>Yonatan Bisk</u>, Deniz Yuret, Daniel Marcu,
Proceedings of the 15th Annual Conference of the North American Chapter of the Association for Computational Linguistics, (Oral)

2016   **Supertagging with LSTMs**
Ashish Vaswani, <u>Yonatan Bisk</u>, Kenji Sagae, Ryan Musa,
Proceedings of the 15th Annual Conference of the North American Chapter of the Association for Computational Linguistics (Short Papers), (Oral)

2016   **Evaluating Induced CCG Parsers on Grounded Semantic Parsing**
<u>Yonatan Bisk</u>, Siva Reddy, John Blitzer, Julia Hockenmaier, Mark Steedman,
Proceedings of the 2016 Conference on Empirical Methods in Natural Language Processing

2015   **Probing the Linguistic Strengths and Limitations of Unsupervised Grammar Induction**
<u>Yonatan Bisk</u>, 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 1: Long Papers), (Oral)

2015   **Labeled Grammar Induction with Minimal Supervision**
<u>Yonatan Bisk</u>, Christos Christodoulopoulos, 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)

2013   **An HDP Model for Inducing Combinatory Categorial Grammars**
<u>Yonatan Bisk</u>, Julia Hockenmaier,
Transactions of the Association for Computational Linguistics

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

2012   **Document-Topic Hierarchies from Document Graphs**
Tim Weninger, <u>Yonatan Bisk</u>, Jiawei Han,
Proceedings of the 21st ACM international conference on Information and knowledge management (CIKM 2012)

2010   **Normal-form parsing for CCGs with generalized composition and type-raising**
Julia Hockenmaier, <u>Yonatan Bisk</u>,
Proceedings of the 23rd International Conference on Computational Linguistics (Coling 2010)

Workshop Publications & Tech Reports

2021   **Worst of Both Worlds: Biases Compound in Pre-trained Vision-and-Language Models**
Tejas Srinivasan, <u>Yonatan Bisk</u>,
ArXiv

2020   **A Benchmark for Structured Procedural Knowledge Extraction from Cooking Videos**
Frank F. Xu, Lei Ji, Botian Shi, Junyi Du, Graham Neubig, <u>Yonatan Bisk</u>, Nan Duan,
Workshop on NLP Beyond Text

2020   **Multi-View Learning for Vision-and-Language Navigation**
Qiaolin Xia, Xiujun Li, Chunyuan Li, <u>Yonatan Bisk</u>, Zhifang Sui, Jianfeng Gao, Yejin Choi, Noah A. Smith,
ArXiv

2019   **FIND: Identifying Functionally and Structurally Important Features in Protein Sequences with Deep Neural Networks**
Ranjani Murali, James Hemp, Victoria Orphan, <u>Yonatan Bisk</u>,
bioRxiv

2018	**Inducing Grammars with and for Neural Machine Translation**
	Ke Tran, <u>Yonatan Bisk</u>,
	Proceedings of the 2nd Workshop on Neural Machine Translation
2018	**Bridging HMMs and RNNs through Architectural Transformations**
	Jan Buys, <u>Yonatan Bisk</u>, Yejin Choi,
	32nd Conference on Neural Information Processing Systems (NIPS 2018), IRASL workshop
2018	**CHALET: Cornell House Agent Learning Environment**
	Claudia Yan, Dipendra Misra, Andrew Bennett, Aaron Walsman, <u>Yonatan Bisk</u>, Yoav Artzi,
	ArXiv Preprint 1801.07357
2016	**Towards a Dataset for Human Computer Communication via Grounded Language Acquisition**
	<u>Yonatan Bisk</u>, Daniel Marcu, William Wong,
	Proceedings of the AAAI 2016 Workshop on Symbiotic Cognitive Systems
2016	**Unsupervised Neural Hidden Markov Models**
	Ke Tran, <u>Yonatan Bisk</u>, Ashish Vaswani, Daniel Marcu, Kevin Knight,
	Proceedings of the Workshop on Structured Prediction for NLP, (Oral)
2012	**Induction of Linguistic Structure with Combinatory Categorial Grammars**
	<u>Yonatan Bisk</u>, Julia Hockenmaier,
	NAACL HLT Workshop on Induction of Linguistic Structure

Thesis Committees

–	**PhD**, *Volkan Cirik*,	Louis-Philippe Morency and Taylor Berg-Kirkpatrick, CMU
–	**PhD**, *Shruti Palaskar*,	Alan Black and Florian Metze, CMU
–	**PhD**, *Pengcheng Yin*,	Graham Neubig, CMU
–	**PhD**, *Dheeraj Rajagopal*,	Ed Hovy, CMU
–	**PhD**, *Evangelia Spiliopoulou*,	Ed Hovy, CMU
2020	**PhD**, *Zihang Dai*,	Yiming Yang, CMU
2021	**MLT**, *Jing Wen*,	Katerina Fragkiadaki, CMU
–	**Qual**, *Mohit Sharma*, Advisor: Oliver Kroemer, CMU	

Teaching

| 2021 | **11-767 On-Device Machine Learning**, | *Co-Emma Strubell*, # Students: TBD, Fall |
| 2021 | **11-777 MultiModal Machine Learning**, | # Students: 42, Spring |

Diversity and Inclusion

2020	**LTI DEI Committee**,	ongoing
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*

Funding and Awards

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

2020 **Google exploreCSR**, *Broad & Inclusive Language Technology (BILT) @ CMU LTI*,
Co-PI Emma Strubell, Graham Neubig, Summer 2021, $15k

Organization (Workshops and Conference)

2021 **Workshop**, *Embodied AI Workshop – Challenge Organizer*,
Computer Vision and Pattern Recognition

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**

– **Association for Computational Linguistics**, *Machine Learning*

– **Empirical Methods in Natural Language Processing**, *Speech, Vision, Robotics, Multimodal Grounding*

– **Neural Information Processing Systems (NeurIPS)**

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 Rolling	Association for Computational Linguistics Rolling Review,	*2021*
	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 – 2021*
	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*

Invitations and Talks

2021   **2nd Workshop on Advances in Language and Vision Research (ALVR)**, *NAACL*

Understanding the Potential of Scaling Artificial Intelligence for Science Applications Panel, *PNNL*

Guest Lecture: Embodiment for NLP, *UPenn*

Guest Lecture: Multimodality in NLP, *UWashington Linguistics*

2020   **The 2nd Workshop Beyond Vision and Language: Integrating Real-world Knowledge**, *CoLing*

The University of Texas at Austin – Forum for AI

Cornell Learning Machines seminar

Stanford NLP seminar

SRI Center for Vision Technology Lab Panel, *Embodied AI*

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*