Yonatan Bisk

Assistant Professor of Computer Science

 $GHC~6703 \\ \boxtimes ybisk@cs.cmu.edu \\ he/him$

Positions				
2021 - Consulting Professor Microsoft Research	Consulting Professor Microsoft Research			
2020 – Assistant Professor Carnegie Mellon University Language Technologies Institute Robotics Institute (courtesy)	Assistant Professor Carnegie Mellon University Language Technologies Institute			
2019 - Visiting Researcher Microsoft Research	w/ Jianfeng Gao			
2017 - Postdoctoral Scholar University of Washington & Allen Institute for Artificial Intelligence	w/ Yejin Choi			
2015 - Postdoctoral Scholar Information Sciences Institute, University of Southern California	w/ Daniel Marcu			
Education				
2009 BS in Computer Science The University of Texas at Austin Turing Schola Thesis: The Necessity of Separating Control and Logic When Grounding Lang Advisor: Risto Miikkulainen Second Reader: Raymond Mooney				
PhD Students				
PhD Hao Zhu he/him <i>Theory of Mind</i> (co-G Neubig	g) LTI 2019 –			
PhD Jared Fernandez he/him Efficiency (co-E Strube	//) LTI 2020 –			
PhD Vidhi Jain she/her Language to Control	RI 2021 –			
PhD Tiffany Min she/her <i>Embodiment</i> (co-R Salakh	utdinov) MLD 2021 –			
Research Masters Students	Research Masters Students			
MLT Josh Zhanson he/him Embodied Visual Reps	LTI 2020 –			
MLT Yingshan Chang she/her Multimodal Reasoning	LTI 2020 –			
MS Xiaoyu Zhang she/her Collaborative Robot Art (co-O Kroem	<i>ner)</i> 5th 2021 –			
Professional Masters Students				
MRSD Jashkumar Diyora he/him <i>Modular Teleoperation with Autonomy</i>	RI 2021 –			
MRSD Shruti Gangopadhyay she/her Modular Teleoperation with Autonomy	RI 2021 –			
MRSD Jigar Patel he/him <i>Modular Teleoperation with Autonomy</i>	RI 2021 –			
MRSD Prakhar Pradeep he/him <i>Modular Teleoperation with Autonomy</i>	RI 2021 –			
MRSD Shivani Sivakumar she/her <i>Modular Teleoperation with Autonomy</i>	RI 2021 –			
* co-Z Erickson				
Alumni, Interns, and Undergraduates				
Ugrad Feiyu (Gavin) Zhu Video Summarization (co-C Paxton	2021			
Intern Melanie Sclar Symmetric Theory-of-Mind (co-G Neubig	2021			
Intern Blessing Bassey TextVQA	2021			

Journal Publications

1.	The Return of Lexical Dependencies: Neural Lexicalized PCFGs Hao Zhu, Yonatan Bisk, Graham Neubig, Transactions of the Association for Computational Linguistics	
2.	An HDP Model for Inducing Combinatory Categorial Grammars Yonatan Bisk, Julia Hockenmaier, Transactions of the Association for Computational Linguistics	2013
	Conference Publications	
3.	FILM: Following Instructions in Language with Modular Methods So Yeon Min, Devendra Singh Chaplot, Pradeep Ravikumar, Yonatan Bisk, Ruslan Salakhutdinov, The Tenth International Conference on Learning Representations	2021
4.	Dependency Induction Through the Lens of Visual Perception Ruisi Su, Shruti Rijhwani, Hao Zhu, Junxian He, Xinyu Wang, <u>Yonatan Bisk</u> , Graham Neubig, <i>The SIGNLL Conference on Computational Natural Language Learning</i>	2021
5.	Language Grounding with 3D Objects Jesse Thomason, Mohit Shridhar, Yonatan Bisk, Chris Paxton, Luke Zettlemoyer, Conference on Robot Learning	2021
6.	TACo: Token-aware Cascade Contrastive Learning for Video-Text Alignment Jianwei Yang, Yonatan Bisk, Jianfeng Gao, International Conference on Computer Vision	2021
7.	Few-shot Language Coordination by Modeling Theory of Mind Hao Zhu, Graham Neubig, Yonatan Bisk, The Thirty-eighth International Conference on Machine Learning	2021
8.	Grounding 'Grounding' in NLP Khyathi Raghavi Chandu, Yonatan Bisk, Alan W Black, Findings of The 2021 Conference of the Association for Computational Linguistics	2021
9.	An Empirical Study on the Generalization Power of Neural Representations Learned via Guessing Games Alessandro Suglia, Yonatan Bisk, Ioannis Konstas, Antonio Vergari, Emanuele Bastianelli, Andrea Vanzo Lemon, The 2021 Conference of the European Chapter of the Association for Computational Linguistics, (Ora	2021 o, Oliver
10.	Knowledge-driven Data Construction for Zero-shot Evaluation in Commonsense Questicswering Kaixin Ma, Filip Ilievski, Jonathan Francis, Yonatan Bisk, Eric Nyberg, Alessandro Oltramari, 35th AAAI Conference on Artificial Intelligence	on A n- 2021
11.	ALFWorld: Aligning Text and Embodied Environments for Interactive Learning Mohit Shridhar, Xingdi Yuan, Marc-Alexandre Côté, Yonatan Bisk, Adam Trischler, Matthew Hauskne Proceedings of the International Conference on Learning Representations	2021 cht,
12.	Imagining Grounded Conceptual Representations from Perceptual Information in Si Guessing Games Alessandro Suglia, Antonio Vergari, Ioannis Konstas, <u>Yonatan Bisk</u> , Emanuele Bastianelli, Andrea Vanzo Lemon,	2020
	The 28th International Conference on Computational Linguistics, (Oral)	
13.	Experience Grounds Language Yonatan Bisk, Ari Holtzman, Jesse Thomason, Jacob Andreas, Yoshua Bengio, Joyce Chai, Mirella Angeliki Lazaridou, Jonathan May, Aleksandr Nisnevich, Nicolas Pinto, Joseph Turian, Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP),	-
14.	RMM: A Recursive Mental Model for Dialog Navigation Homero Roman Roman, Yonatan Bisk, Jesse Thomason, Asli Celikyilmaz, Jianfeng Gao, Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing: Findings	2020
15.	ALFRED: A Benchmark for Interpreting Grounded Instructions for Everyday Tasks Mohit Shridhar, Jesse Thomason, Daniel Gordon, Yonatan Bisk, Winson Han, Roozbeh Mottaghi, Luke moyer, Dieter Fox, The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)	2020 e Zettle-
16.	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, (Oral)	2020

17.	Robust Navigation with Language Pretraining and Stochastic Sampling Xiujun Li, Chunyuan Li, Qiaolin Xia, Yonatan Bisk, Asli Celikyilmaz, Jianfeng Gao, Noah A. Smith, Yejin Che Conference on Empirical Methods in Natural Language Processing and 9th International Joint Conference Natural Language Processing	
18.	Defending Against Neural Fake News Rowan Zellers, Ari Holtzman, Hannah Rashkin, <u>Yonatan Bisk</u> , Ali Farhadi, Franziska Roesner, Yejin Cho <i>Thirty-third Conference on Neural Information Processing Systems</i>	2019 oi,
19.	Improving Robot Success Detection using Static Object Data Rosario Scalise, Jesse Thomason, Yonatan Bisk, Siddhartha Srinivasa, Proceedings of the 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems	2019
20.	Early Fusion for Goal Directed Robotic Vision Aaron Walsman, <u>Yonatan Bisk</u> , Saadia Gabriel, Dipendra Misra, Yoav Artzi, Yejin Choi, Dieter Fox, <i>Proceedings of the 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems</i>	2019
21.	HellaSwag: Can a Machine Really Finish Your Sentence? Rowan Zellers, Ari Holtzman, Yonatan Bisk, Ali Farhadi, Yejin Choi, Proceedings of the Association for Computational Linguistics	2019
22.	From Recognition to Cognition: Visual Commonsense Reasoning Rowan Zellers, Yonatan Bisk, Ali Farhadi, Yejin Choi, The IEEE Conference on Computer Vision and Pattern Recognition (CVPR), (Oral)	2019
23.	Tactical Rewind: Self-Correction via Backtracking in Vision-and-Language Navigation Liyiming Ke, Xiujun Li, Yonatan Bisk, Ari Holtzman, Zhe Gan, Jingjing Liu, Jianfeng Gao, Yejin Chodhartha Srinivasa,	2019 i, Sid-
	The IEEE Conference on Computer Vision and Pattern Recognition (CVPR), (Oral)	
24.	Prospection: Interpretable Plans From Language By Predicting the Future Chris Paxton, Yonatan Bisk, Jesse Thomason, Arunkumar Byravan, Dieter Fox, Proceedings of the International Conference on Robotics and Automation (ICRA)	2019
25.	Shifting the Baseline: Single Modality Performance on Visual Navigation & QA Jesse Thomason, Daniel Gordon, Yonatan Bisk,	2019
	Proceedings of the Annual Conference of the North American Chapter of the Association for Computa Linguistics	ational
26.	Benchmarking Hierarchical Script Knowledge Yonatan Bisk, Jan Buys, Karl Pichotta, Yejin Choi, Proceedings of the Annual Conference of the North American Chapter of the Association for Comput.	2019 ational
27.	Linguistics, (Oral) Character-based Surprisal as a Model of Reading Difficulty in the Presence of Errors Michael Hahn, Frank Keller, Yonatan Bisk, Yonatan Belinkov, The 41st Annual Meeting of the Cognitive Science Society, (Oral)	2019
28.	SWAG: A Large-Scale Adversarial Dataset for Grounded Commonsense Inference Rowan Zellers, Yonatan Bisk, Roy Schwartz, Yejin Choi,	2018
	Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing (EMNLP), ((Oral)
29.	Synthetic and Natural Noise Both Break Neural Machine Translation Yonatan Belinkov, Yonatan Bisk, Proceedings of the 6th International Conference on Learning Representations, (Oral)	2018
30.	Learning Interpretable Spatial Operations in a Rich 3D Blocks World Yonatan Bisk, Kevin Shih, Yejin Choi, Daniel Marcu, Proceedings of the Thirty-Second Conference on Artificial Intelligence (AAAI-18)	2018
31.	Natural Language Inference from Multiple Premises Alice Lai, Yonatan Bisk, Julia Hockenmaier, Proceedings of the Eighth International Joint Conference on Natural Language Processing, (Oral)	2017
32.	Natural Language Communication with Robots Yonatan Bisk, Deniz Yuret, Daniel Marcu,	2016
	Proceedings of the 15th Annual Conference of the North American Chapter of the Association for Computa Linguistics, (Oral)	ational
33.	Supertagging with LSTMs	2016
	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 Comput. Linguistics (Short Papers). (Oral)	ational

34.	Evaluating Induced CCG Parsers on Grounded Semantic Parsing Yonatan Bisk, Siva Reddy, John Blitzer, Julia Hockenmaier, Mark Steedman, Proceedings of the 2016 Conference on Empirical Methods in Natural Language Processing	
35.	Probing the Linguistic Strengths and Limitations of Unsupervised Grammar Induction Yonatan Bisk, Julia Hockenmaier,	
	Proceedings of the 53rd Annual Meeting of the Association for Computational Linguistics and the 7th tional Joint Conference on Natural Language Processing (Volume 1: Long Papers), (Oral)	
36.	Labeled Grammar Induction with Minimal Supervision Yonatan Bisk, Christos Christodoulopoulos, Julia Hockenmaier, Proceedings of the 53rd Annual Meeting of the Association for Computational Linguistics and the 7th	2015
	tional Joint Conference on Natural Language Processing (Volume 2: Short Papers)	т ппетпа-
37.	Simple Robust Grammar Induction with Combinatory Categorial Grammar Yonatan Bisk, Julia Hockenmaier, Proceedings of the Twenty-Sixth Conference on Artificial Intelligence (AAAI-12)	2012
38.	Document-Topic Hierarchies from Document Graphs	2012
	Tim Weninger, Yonatan Bisk, Jiawei Han, Proceedings of the 21st ACM international conference on Information and knowledge managemen 2012)	nt (CIKM
39.	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)	2010
	Workshop Publications	
40.	KB-VLP: Knowledge Based Vision and Language Pretraining Kezhen Chen, Qiuyuan Huang, Yonatan Bisk, Daniel McDuff, Jianfeng Gao, ICML21 Workshop on Self-Supervised Learning	2021
41.	A Benchmark for Structured Procedural Knowledge Extraction from Cooking Videos Frank F. Xu, Lei Ji, Botian Shi, Junyi Du, Graham Neubig, Yonatan Bisk, Nan Duan, Workshop on NLP Beyond Text	2020
42.	Inducing Grammars with and for Neural Machine Translation Ke Tran, Yonatan Bisk, Proceedings of the 2nd Workshop on Neural Machine Translation	2018
43.	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
44.	Towards a Dataset for Human Computer Communication via Grounded Language Acc	quisition
	2016 <u>Yonatan Bisk, Daniel Marcu, William Wong,</u> Proceedings of the AAAI 2016 Workshop on Symbiotic Cognitive Systems	
45.	Unsupervised Neural Hidden Markov Models Ke Tran, Yonatan Bisk, Ashish Vaswani, Daniel Marcu, Kevin Knight, Proceedings of the Workshop on Structured Prediction for NLP, (Oral)	2016
46.	Induction of Linguistic Structure with Combinatory Categorial Grammars Yonatan Bisk, Julia Hockenmaier, NAACL HLT Workshop on Induction of Linguistic Structure	2012
	Tech Reports	
47.	KAT: A Knowledge Augmented Transformer for Vision-and-Language Liangke Gui, Borui Wang, Qiuyuan Huang, Alex Hauptmann, Yonatan Bisk, Jianfeng Gao, ArXiv	2021
48.	Learning When and What to Ask: a Hierarchical Reinforcement Learning Framework Khanh Nguyen, Yonatan Bisk, Hal Daume III, ArXiv	2021
49.	WebQA: Multihop and Multimodal QA Yingshan Chang, Mridu Narang, Hisami Suzuki, Guihong Cao, Jianfeng Gao, <u>Yonatan Bisk</u> , ArXiv	2021

50.	Worst of Both Worlds: Biases Compo Tejas Srinivasan, <u>Yonatan Bisk</u> , <i>ArXiv</i>	ound in Pre-trained Vision-and-Language Models	2021
51.	Multi-View Learning for Vision-and-Language Navigation 2020 Qiaolin Xia, Xiujun Li, Chunyuan Li, Yonatan Bisk, Zhifang Sui, Jianfeng Gao, Yejin Choi, Noah A. Smith, ArXiv		
52.	Deep Neural Networks Ranjani Murali, James Hemp, Victoria Orph	ructurally Important Features in Protein Sequence an, Yonatan Bisk,	s with 2019
	bioRxiv		
53.	CHALET: Cornell House Agent Learn Claudia Yan, Dipendra Misra, Andrew Benn ArXiv Preprint 1801.07357	ning Environment ett, Aaron Walsman, <u>Yonatan Bisk</u> , Yoav Artzi,	2018
54.	Unsupervised Grammar Induction with Yonatan Bisk, University of Illinois at Urbana-Champaign	h Combinatory Categorial Grammars	2015
	Thesis Committees		
_	PhD Kaixin Ma	Eric Nyberg,	CMU
_	PhD Dylan Ebert	Ellie Pavlick, E	
_	PhD Shikib Mehri	Maxine Eskenazi ,	
_	PhD Volkan Cirik	Louis-Philippe Morency and Taylor Berg-Kirkpatrick,	
_	PhD Shruti Palaskar	Alan Black and Florian Metze,	
_	PhD Dheeraj Rajagopal	Ed Hovy,	
_	PhD Evangelia Spiliopoulou	Ed Hovy,	CMU
2022	MLT Aishwarya Jadhav Katia Sycara, CM		CMU
2021	PhD Pengcheng Yin	Graham Neubig,	CMU
2020	PhD Zihang Dai	Yiming Yang,	CMU
2021	MLT Jing Wen	Katerina Fragkiadaki,	CMU
2021	Qual Mohit Sharma	Oliver Kroemer,	CMU
	Teaching		
2021	11-777 MultiModal Machine Learning	g # Students: 4	2, SP
2021	11-767 On-Device Machine Learning	Co-Emma Strubell # Students: 3	1, FA
2022	11-777 MultiModal Machine Learning		
	Diversity and Inclusion		
2022	NAACL 2022 DEI Co-Chair,	on	ngoing
2020	LTI DEI Committee,		going
2019	CrashCourse AI Educational YouTube Ashe. Co-Written with Lana Yarosh and	series targeted at high-school age viewers. Hosted by	
2018	ACM Council on Diversity & Inclusion on behalf of underrepresented groups.,	n Investigating and initiating institutional change within	a ACM <i>1yr</i>
_	Grace Hopper PC member Review sub	omissions to Al Technical Track,	1yr
2016	NCWIT Collegiate Award Review appreciate Technology's Collegiate Award honoring	olications for the National Center for Women & Inform college women, ISI	mation <i>3yrs</i>
2009	· · · · · · · · · · · · · · · · · · ·	view applications for the National Center for Women $\&$ ons in Computing which supports high-school girls into	
_	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 of	camp for girls interested in CS, UTexas	

-	LTI Junior Chair, Aug 2021 – Aug 2023
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)
2022	Workshop Embodied AI Workshop – Challenge Organizer Computer Vision and Pattern Recognition
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 NeurlPS
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 / Action Editor
2022	International Conference on Learning Representations
_	Association for the Advancement of Artificial Intelligence Senior Meta-Reviewer
_	Transactions on Machine Learning Research Action Editor
_	ACL Rolling Review
2021	International Conference on Learning Representations
_	Association for Computational Linguistics Machine Learning
-	Empirical Methods in Natural Language Proc Speech, Vision, Robotics, Multimodal Grounding
_	Neural Information Processing Systems (NeurIPS)
_	ACL Rolling Review
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

Conference on Lexical and Computational Semantics (*SEM) Sem. Parsing and Role Labeling

2018 International Conference on Computational Linguistics

- Co-Founded Breakfast Bytes Professor talks for pre-college students, UTexas

CS Roadshow CS presentations at Austin middle and high schools, UTexas

Co-PI Graham Neubig, Dan Yurovsky, Aug 2021 – Dec 2022, \$300K

Funding and Awards

NSF EAGER

2021

2016

1yr

1yr

Reviewer

NLP	ARR	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 – 2021
	RSS	Robotics: Science and Systems	2022
	HRI	Human Robot Interaction	2020 – 2022
	ICRA	International Conference on Robotics and Automation	2019
	IJRR	International Journal of Robotics Research	2017
	IROS	IEEE/RSJ International Conference on Intelligent Robots and System	ns 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

2022 Following Instructions and Asking Questions UCSB NLP

2021 Following Instructions and Asking Questions UIUC NLP

WebQA: Multihop and Multimodal QA PNNL Mega-Al Seminar

Following Instructions and Asking Questions *Human Interaction for Robotic Navigation Workshop @ ICCV*

WebQA: Multihop and Multimodal Microsoft Research Summit

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

Instructions, Abstraction, and Theory-of-Mind Koç University Al center

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 Al

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

- **Invited Poster** The Impact of Computing in Our Physical World session of the CRA's Computing Community Consortium (CCC) Symposium on Computing Research
- **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