

Daniel Fried

CONTACT INFORMATION	dfried@cs.cmu.edu dpfried.github.io	
POSITIONS	Assistant Professor , Carnegie Mellon University Language Technologies Institute, School of Computer Science	2022 – present
EDUCATION	UC Berkeley Ph.D. in Computer Science <i>Adviser</i> : Dan Klein <i>Thesis</i> : Learning Grounded Pragmatic Communication	2015 – 2021
	University of Cambridge , Churchill College M.Phil. in Computer Science, <i>with distinction</i> <i>Adviser</i> : Stephen Clark <i>Thesis</i> : Low Rank Tensor Approximations for Compositional Distributional Semantics	2014 – 2015
	University of Arizona B.S. in Computer Science, Mathematics, and Information Science, <i>summa cum laude</i> <i>Thesis Adviser</i> : Mihai Surdeanu <i>Thesis</i> : Predicting Community Traits Using the Language of Food on Social Media	2010 – 2014
FORMER POSITIONS	Postdoc , University of Washington <i>Host</i> : Luke Zettlemoyer	2021 – 2022
	Visiting Researcher , Facebook AI Research <i>Host</i> : Mike Lewis	2021 – 2022
	Research Intern , Google DeepMind <i>Hosts</i> : Aida Nematzadeh, Stephen Clark, Chris Dyer <i>Project</i> : Structured models for language-conditioned video segmentation	Summer 2019
	Research Intern , Microsoft Research <i>Hosts</i> : Hoifung Poon, Chris Quirk, Kristina Toutanova, Scott Wen-Tau Yih <i>Project</i> : Learning to rank for personalized medicine	Summer 2016
	Undergraduate Research Assistant , University of Arizona <i>Advisers</i> : Mihai Surdeanu, Stephen Kobourov, Paul R. Cohen <i>Areas</i> : Question answering, language grounding, data visualization	2012 – 2014
	Research Intern , Nara Institute of Science and Technology <i>Host</i> : Kevin Duh <i>Project</i> : Incorporating relational semantics in word embeddings	Fall 2013
	Research Intern , RWTH Aachen University <i>Hosts</i> : Ali Jannesari, Zhen Li <i>Project</i> : Supervised learning for automatic code parallelization	Summer 2013
	Engineering Intern , Microsoft <i>Project</i> : Data warehousing, analytics, and visualization for Xbox Live	Summer 2012
HONORS & AWARDS	Okawa Research Award	2023
	Google Ph.D. Fellowship in Natural Language Processing	2019 – 2021
	Outstanding Graduate Student Instructor, UC Berkeley	2018
	Outstanding Reviewer, ACL	2018, 2020, 2021, 2022
	Outstanding Reviewer, NeurIPS	2019
	Tencent AI Lab Fellowship	2018 – 2019
	Huawei & Berkeley AI Fellowship	2017 – 2018
	Best M.Phil. Student Award, Cambridge Computer Laboratory	2015
	Churchill Scholarship	2014 – 2015
	NDSEG Fellowship	2014

Finalist, Hertz Graduate Fellowship	2014
Outstanding Senior Award in Research, U. Arizona College of Science	2014
Outstanding Senior Award in Academics, U. Arizona Computer Science	2014
Outstanding Senior Award in Academics, U. Arizona Information Science	2014
Barry M. Goldwater Scholarship	2013
National Merit Scholar	2010 – 2014
Flinn Scholarship, Flinn Foundation of Arizona	2010 – 2014
Presidential Scholar, U.S. Department of Education	2010

JOURNAL PUBLICATIONS

1. **StarCoder: May the Source Be With You!**
Raymond Li et al. (68 authors from the BigCode Project)
Transactions on Machine Learning Research (TMLR), 2023
2. **Human-Level Play in the Game of Diplomacy by Combining Language Models with Strategic Reasoning**
FAIR Diplomacy Team
Science, 2022
3. **Syntactic Structure Distillation Pretraining for Bidirectional Encoders**
Adhiguna Kuncoro*, Lingpeng Kong*, Daniel Fried*, Dani Yogatama, Laura Rimell, Chris Dyer, and Phil Blunsom
Transactions of the Association for Computational Linguistics (ACL), 2020
4. **Higher-Order Lexical Semantic Models for Non-Factoid Answer Reranking**
Daniel Fried, Peter Jansen, Gustave Hahn-Powell, Mihai Surdeanu, and Peter Clark
Transactions of the Association for Computational Linguistics (ACL), 2015

CONFERENCE PUBLICATIONS

5. **Asking More Informative Questions for Grounded Retrieval**
Sedrick Keh, Justin T. Chiu, and Daniel Fried
Findings of NAACL, 2024
6. **Generating Pragmatic Examples to Train Neural Program Synthesizers**
Saujas Vaduguru, Daniel Fried, and Yewen Pu
International Conference on Learning Representations (ICLR), 2024
7. **Sotopia: Interactive Evaluation for Social Intelligence in Language Agents**
Xuhui Zhou*, Hao Zhu*, Leena Mathur, Ruohong Zhang, Haofei Yu, Zhengyang Qi, Louis-Philippe Morency, Yonatan Bisk, Daniel Fried, Graham Neubig, and Maarten Sap
International Conference on Learning Representations (ICLR), 2024
8. **WebArena: A Realistic Web Environment for Building Autonomous Agents**
Shuyan Zhou*, Frank Xu*, Hao Zhu**, Xuhui Zhou**, Robert Lo**, Abishek Sridhar**, Xianyi Cheng, Yonatan Bisk, Daniel Fried, Uri Alon, and Graham Neubig
International Conference on Learning Representations (ICLR), 2024
9. **API-Assisted Code Generation for Question Answering on Varied Table Structures**
Yihan Cao*, Shuyi Chen*, Ryan Liu*, Zhiruo Wang, and Daniel Fried
Empirical Methods in Natural Language Processing (EMNLP), 2023
10. **Symbolic Planning and Code Generation for Grounded Dialogue**
Justin Chiu, Wenting Zhao, Derek Chen, Saujas Vaduguru, Alexander Rush, and Daniel Fried
Empirical Methods in Natural Language Processing (EMNLP), 2023
11. **Pragmatics in Language Grounding: Phenomena, Tasks, and Modeling Approaches**
Daniel Fried*, Nicholas Tomlin*, Jennifer Hu, Roma Patel, and Aida Nematzadeh
Findings of EMNLP, 2023
12. **Execution-Based Evaluation for Open-Domain Code Generation**
Zhiruo Wang, Shuyan Zhou, Daniel Fried, and Graham Neubig
Findings of EMNLP, 2023

13. **Data Augmentation for Code Translation with Comparable Corpora and Multiple References**
Yiqing Xie, Atharva Naik, [Daniel Fried](#), Carolyn Rose
Findings of EMNLP, 2023
14. **AutoReply: Detecting Nonsense in Dialogue Introspectively with Discriminative Replies**
Weiyang Shi, Emily Dinan, Adi Renduchintala, [Daniel Fried](#), Athul Paul Jacob, Zhou Yu, and Mike Lewis
Findings of EMNLP, 2023
15. **Generating Images with Multimodal Language Models**
Jing Yu Koh, [Daniel Fried](#), and Ruslan Salakhutdinov
Neural Information Processing Systems (NeurIPS), 2023
16. **Pragmatic Inference with a CLIP Listener for Contrastive Captioning**
Jiefu Ou, Benno Krojer, and [Daniel Fried](#)
Findings of ACL, 2023
17. **Contrastive Decoding: Open-ended Text Generation as Optimization**
Xiang Lisa Li, Ari Holtzman, [Daniel Fried](#), Percy Liang, Jason Eisner, Tatsunori Hashimoto, Luke Zettlemoyer, and Mike Lewis
Annual Meeting of the Association for Computational Linguistics (ACL), 2023
18. **Grounding Language Models to Images for Multimodal Inputs and Outputs**
Jing Yu Koh, Ruslan Salakhutdinov, and [Daniel Fried](#)
International Conference on Machine Learning (ICML), 2023
19. **Coder Reviewer Reranking for Code Generation**
Tianyi Zhang, Tao Yu, Tatsunori B. Hashimoto, Mike Lewis, Wen-tau Yih, [Daniel Fried](#), and Sida I. Wang
International Conference on Machine Learning (ICML), 2023
20. **DS-1000: A Natural and Reliable Benchmark for Data Science Code Generation**
Yuhang Lai*, Chengxi Li*, Yiming Wang*, Tianyi Zhang*, Ruiqi Zhong*, Luke Zettlemoyer, Scott Wen-tau Yih, [Daniel Fried](#), Sida I. Wang, and Tao Yu
International Conference on Machine Learning (ICML), 2023
21. **InCoder: A Generative Model for Code Infilling and Synthesis**
[Daniel Fried](#)*, Armen Aghajanyan*, Jessy Lin, Sida I. Wang, Eric Wallace, Freda Shi, Ruiqi Zhong, Wen-tau Yih, Luke Zettlemoyer, and Mike Lewis
International Conference on Learning Representations (ICLR), 2023
22. **Natural Language to Code Translation with Execution**
Freda Shi, [Daniel Fried](#), Marjan Ghazvininejad, Luke Zettlemoyer, and Sida I. Wang
Empirical Methods in Natural Language Processing (EMNLP), 2022
23. **Neural Theory-of-Mind? On the Limits of Social Intelligence in Large LMs**
Maarten Sap, Ronan Le Bras, [Daniel Fried](#), and Yejin Choi
Empirical Methods in Natural Language Processing (EMNLP), 2022
24. **G3: Geolocation via Guidebook Grounding**
Grace Luo*, Giscard Biamby*, Trevor Darrell, [Daniel Fried](#), and Anna Rohrbach
Findings of EMNLP, 2022.
25. **Inferring Rewards from Language in Context**
Jessy Lin, [Daniel Fried](#), Dan Klein, and Anca Dragan
Annual Meeting of the Association for Computational Linguistics (ACL), 2022
26. **Reference-Centric Models for Grounded Collaborative Dialogue**
[Daniel Fried](#), Justin Chiu, and Dan Klein
Empirical Methods in Natural Language Processing (EMNLP), 2021
27. **Modular Networks for Compositional Instruction Following**
Rodolfo Corona, [Daniel Fried](#), Coline Devin, Dan Klein, and Trevor Darrell
North American Chapter of the Association for Computational Linguistics (NAACL), 2021

28. **Learning to Segment Actions from Observation and Narration**
Daniel Fried, Jean-Baptiste Alayrac, Phil Blunsom, Chris Dyer, Stephen Clark, Aida Nematzadeh
Annual Meeting of the Association for Computational Linguistics (ACL), 2020
29. **Cross-Domain Generalization of Neural Constituency Parsers**
Daniel Fried*, Nikita Kitaev*, and Dan Klein
Annual Meeting of the Association for Computational Linguistics (ACL), 2019
30. **Are You Looking? Grounding to Multiple Modalities in Vision-and-Language Navigation**
 Ronghang Hu, Daniel Fried, Anna Rohrbach, Dan Klein, Trevor Darrell, and Kate Saenko
Annual Meeting of the Association for Computational Linguistics (ACL), 2019
31. **Pragmatically Informative Text Generation**
 Sheng Shen, Daniel Fried, Jacob Andreas, and Dan Klein
North American Chapter of the Association for Computational Linguistics (NAACL), 2019
32. **Speaker-Follower Models for Vision-and-Language Navigation**
Daniel Fried*, Ronghang Hu*, Volkan Cirik*, Anna Rohrbach, Jacob Andreas, Louis-Philippe Morency, Taylor Berg-Kirkpatrick, Kate Saenko, Dan Klein**, and Trevor Darrell**
Neural Information Processing Systems (NeurIPS), 2018
33. **Policy Gradient as a Proxy for Dynamic Oracles in Constituency Parsing**
Daniel Fried and Dan Klein
Annual Meeting of the Association for Computational Linguistics (ACL), 2018
34. **Unified Pragmatic Models for Generating and Following Instructions**
Daniel Fried, Jacob Andreas, and Dan Klein
North American Chapter of the Association for Computational Linguistics (NAACL), 2018
35. **Effective Inference for Generative Neural Parsing**
 Mitchell Stern, Daniel Fried, and Dan Klein
Empirical Methods in Natural Language Processing (EMNLP), 2017
36. **Improving Neural Parsing by Disentangling Model Combination and Reranking Effects**
Daniel Fried*, Mitchell Stern*, and Dan Klein
Annual Meeting of the Association for Computational Linguistics (ACL), 2017
37. **Towards Using Social Media to Identify Individuals at Risk for Preventable Chronic Illness**
 Dane Bell, Daniel Fried, Luwen Huangfu, Mihai Surdeanu, and Stephen Kobourov
Language Resources and Evaluation Conference (LREC), 2016
38. **Low-Rank Tensors for Verbs in Compositional Distributional Semantics**
Daniel Fried, Tamara Polajnar, and Stephen Clark
Annual Meeting of the Association for Computational Linguistics (ACL), 2015
39. **Analyzing the Language of Food on Social Media**
Daniel Fried, Mihai Surdeanu, Stephen Kobourov, Melanie Hingle, and Dane Bell
International Conference on Big Data, 2014
40. **Maps of Computer Science**
Daniel Fried and Stephen Kobourov
Pacific Visualization Symposium (PacificVis), 2014
41. **Predicting Parallelization of Sequential Programs Using Supervised Learning**
Daniel Fried, Zhen Li, Ali Jannesari, and Felix Wolf
International Conference on Machine Learning and Applications, 2013
42. **A Generative Probabilistic Framework for Learning Spatial Language**
 Colin Dawson, Jeremy Wright, Antons Rebguns, Marco Valenzuela Escárcega, Daniel Fried, and Paul Cohen
International Conference on Development and Learning, 2013. **Best Paper Award**
43. **Bayesian Geometric Modeling of Indoor Scenes**
 Luca Del Pero, Joshua Bowdish, Daniel Fried, Bonnie Kermgard, Emily Hartley, and Kobus Barnard
Conference on Computer Vision and Pattern Recognition (CVPR), 2012

44. **SantaCoder: Don't Reach for the Stars**
Loubna Ben Allal*, Raymond Li*, Denis Kocetkov*, et al. (41 authors from the BigCode Project)
Deep Learning for Code Workshop, 2023. Best Paper Award
45. **Modeling Perspective-Dependent Ambiguity in Grounded Collaborative Dialogue**
Justin Chiu, Wenting Zhao, Alexander M. Rush, and Daniel Fried
Wordplay: When Language Meets Games Workshop, 2022
46. **Interactive Assignments for Teaching Structured Neural NLP**
David Gaddy, Daniel Fried, Nikita Kitaev, Mitchell Stern, Rodolfo Corona, John DeNero, and Dan Klein
Teaching NLP Workshop at NAACL, 2021
47. **Challenges for Using Social Media for Early Detection of Type II Diabetes Mellitus**
Dane Bell, Daniel Fried, Luwen Huangfu, Mihai Surdeanu, and Stephen Kobourov
International Workshop on Social Media World Sensors, 2016
48. **Learning Low-Rank Tensors for Transitive Verbs**
Daniel Fried, Tamara Polajnar, and Stephen Clark
Advances in Distributional Semantics Workshop, 2015
49. **Incorporating both Distributional and Relational Semantics in Word Representations**
Daniel Fried and Kevin Duh
International Conference on Learning Representations (ICLR) Workshop, 2015

PREPRINTS

50. **CodeBenchGen: Creating Scalable Execution-based Code Generation Benchmarks**
Yiqing Xie, Alex Xie, Divyanshu Sheth, Pengfei Liu, Daniel Fried, and Carolyn Rose
arXiv, 2024.
51. **What Are Tools Anyway? A Survey from the Language Model Perspective**
Zora Zhiruo Wang, Zhoujun Cheng, Hao Zhu, Daniel Fried, and Graham Neubig
arXiv, 2024
52. **Repetition Improves Language Model Embeddings**
Jacob Mitchell Springer, Suhas Kotha, Daniel Fried, Graham Neubig, and Aditi Raghunathan
arXiv, 2024
53. **VisualWebArena: Evaluating Multimodal Agents on Realistic Visual Web Tasks**
Jing Yu Koh, Robert Lo*, Lawrence Jang*, Vikram Duvvur*, Ming Chong Lim*, Po-Yu Huang*,
Graham Neubig, Shuyan Zhou, Ruslan Salakhutdinov, and Daniel Fried
arXiv, 2024
54. **TroVE: Inducing Verifiable and Efficient Toolboxes for Solving Programmatic Tasks**
Zhiruo Wang, Graham Neubig, and Daniel Fried
arXiv, 2024
55. **Comparative Knowledge Distillation**
Alex Wilf, Alex Tianyi Xu, Paul Pu Liang, Alexander Obolenskiy, Daniel Fried, and Louis-Philippe
Morency
arXiv, 2023
56. **Amortizing Pragmatic Program Synthesis with Rankings**
Yewen Pu, Saujas Vaduguru, Priyan Vaithilingam, Elena Glassman, and Daniel Fried
arXiv, 2023

*, **: equal contribution

STUDENTS

PhD thesis advisor:

- Jing Yu (JY) Koh (with Ruslan Salakhutdinov)
- Andy Liu (with Mona Diab)
- Saujas Vaduguru
- Zhiruo (Zora) Wang (with Graham Neubig)

MLT thesis advisor:

- Alex Xie (with Matt Gormley and Vincent Hellendoorn)

PhD committee member:

- Shuyan Zhou
- Aman Madaan
- Ta-Chung Chi
- Nikitha Rao
- Frank Xu
- Ritam Dutt
- Ruohong Zhang

TEACHING

Instructor: 11-891, Neural Code Generation, CMU, Spring 2024

Instructor: 11-877, Advanced Multimodal Machine Learning, CMU, Spring 2024

Instructor: 11-711, Advanced NLP, CMU, Fall 2023

Instructor: 11-777, Multimodal Machine Learning, CMU, Spring 2023

Instructor: CS188, Artificial Intelligence, UC Berkeley, Summer 2018

Teaching Assistant: CS188, Artificial Intelligence, UC Berkeley, Fall 2017

Teaching Assistant: CS245, Intro to Discrete Structures, University of Arizona, Spring 2012

Teaching Assistant: ISTA100, Great Ideas of the Information Age, University of Arizona, Fall 2011

Project Design: CS288, Natural Language Processing, UC Berkeley, Spring 2020

INVITED TALKS

Interacting with LLMs for Grounded Tasks. NILLI Workshop, EMNLP 2023. Spring 2023

Interacting with (code) LLMs. MIT Neurosymbolic Reading Group. Spring 2023

InCoder, SantaCoder, and StarCoder: Findings from Training Open-Source Code LLMs. Bloomberg AI; GitHub Next. Spring 2023

Using Language Strategically in Context. CoRL Workshop on Strategic Multi-Agent Interactions, 2022; Johns Hopkins University, University of Pennsylvania, UT Austin. Spring 2023

Contextual Communication in Programming. LTI Future of Code Generation Seminar, 2022

Reasoning About Actions and Rewards in Language Interactions. MIT CPL, 2022. (with Jessie Lin)

Modularity in Grounded Interaction. ViGIL Workshop, NAACL 2021. (with Rudy Corona)

Learning Grounded Pragmatic Communication. University of Arizona, TTI-Chicago, University of Southern California, Purdue, Carnegie Mellon University, UC Irvine, Université de Montréal/Mila, Allen Institute for Artificial Intelligence, Facebook AI Research, Google Research, Stanford Cognition and Language Workshop. Spring 2021

Pragmatic Models for Generating and Following Grounded Instructions. Stanford NLP Seminar, University of Arizona, USC ISI. Fall 2018–Spring 2019

ACADEMIC
SERVICE

Workshop co-organizer: Workshop on Large Language Models for Agents, ICLR 2024

Workshop co-organizer: 3rd UnImplicit Workshop, EACL 2024

Workshop co-organizer: 2nd UnImplicit Workshop, NAACL 2022

Workshop co-organizer: 2nd Advances in Language and Vision Workshop, NAACL 2021

Workshop advisory board: Theory of Mind in Communicating Agents, ICML 2023

Outstanding reviewer awards: ACL 2018, NeurIPS 2019, ACL 2020, ACL 2021, ACL 2022

Senior area chair: ACL 2024

Area chair: EMNLP 2022–2023, ACL 2023

Ethics chair: NAACL 2024

Conference organizing: Virtual workshop chair, EMNLP 2024

Reviewing: TAACL 2022–2024; ACL Rolling Review 2021–2023; ACL 2018–2022; EMNLP 2016–2021; NAACL 2019, 2021; AACL-IJCNLP 2020; EACL 2017, 2021; NeurIPS 2019–2023; ICML 2019, 2023; ICLR 2021–2023; AKBC 2021; COLING 2018; *SEM 2016–2018; NAACL-SRW 2016, 2018; ACL-SRW 2020; IJCAI 2016; SpLU-RobonLP 2019, 2021; NeuralGen 2019; ViGIL 2019, 2021; DeepLo 2019; ALVR 2020, 2021; LaReL 2020; Cooperative AI 2021; Meaning in Context 2021