

# Daniel Fried

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**CONTACT** dfried@cs.cmu.edu  
**INFORMATION** dpfried.github.io

<b>POSITIONS</b>	<b>Assistant Professor</b> , Carnegie Mellon University Language Technologies Institute, School of Computer Science	2022 – present
<b>EDUCATION</b>	<b>UC Berkeley</b> Ph.D. in Computer Science <i>Adviser:</i> Dan Klein <i>Thesis:</i> Learning Grounded Pragmatic Communication	2015 – 2021
	<b>University of Cambridge</b> , 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
	<b>University of Arizona</b> 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
<b>FORMER POSITIONS</b>	<b>Research Scientist</b> , Meta <i>Areas:</i> LLM-based coding agents	2024 – 2025
	<b>Research Consultant</b> , GitHub Next <i>Areas:</i> LLM-based models for code editing	2023 – 2024
	<b>Postdoc</b> , University of Washington <i>Host:</i> Luke Zettlemoyer	2021 – 2022
	<b>Visiting Researcher</b> , Facebook AI Research <i>Host:</i> Mike Lewis	2021 – 2022
	<b>Research Intern</b> , Google DeepMind <i>Hosts:</i> Aida Nematzadeh, Stephen Clark, Chris Dyer <i>Project:</i> Structured models for language-conditioned video segmentation	Summer 2019
	<b>Research Intern</b> , 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
	<b>Undergraduate Research Assistant</b> , University of Arizona <i>Advisers:</i> Mihai Surdeanu, Stephen Kobourov, Paul R. Cohen <i>Areas:</i> Question answering, language grounding, data visualization	2012 – 2014
	<b>Research Intern</b> , Nara Institute of Science and Technology <i>Host:</i> Kevin Duh <i>Project:</i> Incorporating relational semantics in word embeddings	Fall 2013
	<b>Research Intern</b> , RWTH Aachen University <i>Hosts:</i> Ali Jannesari, Zhen Li <i>Project:</i> Supervised learning for automatic code parallelization	Summer 2013
	<b>Engineering Intern</b> , Microsoft <i>Project:</i> Data warehousing, analytics, and visualization for Xbox Live	Summer 2012

<b>HONORS &amp; AWARDS</b>	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
	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. **Tree Search for Language Model Agents**  
Jing Yu Koh, Stephen McAleer, Daniel Fried, and Ruslan Salakhutdinov  
*Transactions on Machine Learning Research (TMLR)*, 2025
2. **StarCoder: May the Source Be With You!**  
Raymond Li et al. (68 authors from the BigCode Project)  
*Transactions on Machine Learning Research (TMLR)*, 2023
3. **Human-Level Play in the Game of Diplomacy by Combining Language Models with Strategic Reasoning**  
FAIR Diplomacy Team  
*Science*, 2022
4. **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 (TACL)*, 2020
5. **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 (TACL)*, 2015

#### CONFERENCE PUBLICATIONS

6. **Generative Value Conflicts Reveal LLM Priorities**  
Andy Liu, Kshitish Ghate, Mona Diab\*, Daniel Fried\*, Atoosa Kasirzadeh\*, Max Kleiman-Weiner\*  
*International Conference on Learning Representations (ICLR)*, 2026
7. **From Reproduction to Replication: Evaluating Research Agents with Progressive Code Masking**  
Gyeongwon James Kim, Alex Wilf, Louis-Philippe Morency, Daniel Fried  
*International Conference on Learning Representations (ICLR)*, 2026
8. **SWE-RL: Advancing LLM Reasoning via Reinforcement Learning on Open Software Evolution**  
Yuxiang Wei, Olivier Duchenne, Jade Copet, Quentin Carboneaux, Lingming Zhang, Daniel Fried, Gabriel Synnaeve, Rishabh Singh, and Sida I. Wang  
*Neural Information Processing Systems (NeurIPS)*, 2025
9. **Identifying and Interactively Refining Ambiguous User Goals for Data Visualization Code Generation**  
Mert Inan, Anthony Sicilia, Alex Xie, Saujas Vaduguru, Daniel Fried, and Malihe Alikhani  
*Empirical Methods in Natural Language Processing (EMNLP)*, 2025
10. **Rewarding the Unlikely: Lifting GRPO Beyond Distribution Sharpening**  
Andre He, Daniel Fried, and Sean Welleck  
*Empirical Methods in Natural Language Processing (EMNLP)*, 2025

11. **mrCAD: Multimodal Refinement of Computer-aided Designs**  
William P. McCarthy, Saujas Vaduguru, Karl D. D. Willis, Justin Matejka, Judith E. Fan, Daniel Fried, and Yewen Pu  
*Findings of EMNLP*, 2025
12. **Inducing Programmatic Skills for Agentic Tasks**  
Zora Zhiruo Wang, Apurva Gandhi, Graham Neubig, Daniel Fried  
*Conference on Language Modeling (COLM)*, 2025
13. **RepoST: Scalable Repository-Level Coding Environment Construction with Sandbox Testing**  
Yiqing Xie, Alex Xie, Divyanshu Sheth, Pengfei Liu, Daniel Fried, Carolyn Rose  
*Conference on Language Modeling (COLM)*, 2025
14. **Improving Model Factuality with Fine-grained Critique-based Evaluator**  
Yiqing Xie, Wenxuan Zhou, Pradyot Prakash, Di Jin, Yuning Mao, Quintin Fettes, Arya Talebzadeh, Sinong Wang, Han Fang, Carolyn Rose, Daniel Fried, and Hejia Zhang  
*Annual Meeting of the Association for Computational Linguistics (ACL)*, 2025
15. **Agent Workflow Memory**  
Zora Zhiruo Wang, Jiayuan Mao, Daniel Fried, and Graham Neubig  
*ICML*, 2025
16. **Dynamic Coalition Structure Detection in Natural Language-based Interactions**  
Abhishek N. Kulkarni\*, Andy Liu\*, Jean-Raphael Gaglione, Daniel Fried, and Ufuk Topcu  
*International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2025
17. **AutoPresent: Designing Structured Visuals from Scratch**  
Jiaxin Ge\*, Zora Zhiruo Wang\*, Xuhui Zhou, Yi-Hao Peng, Sanjay Subramanian, Qinyue Tan, Maarten Sap, Alane Suhr\*\*, Daniel Fried\*\*, Graham Neubig\*\*, and Trevor Darrell\*\*  
*Conference on Computer Vision and Pattern Recognition (CVPR)*, 2025
18. **CRScore: Grounding Automated Evaluation of Code Review Comments in Code Claims and Smells**  
Atharva Naik, Marcus Alenius, Daniel Fried, and Carolyn Rose  
*North American Chapter of the Association for Computational Linguistics (NAACL)*, 2025
19. **CodeRAG-Bench: Can Retrieval Augment Code Generation?**  
Zora Zhiruo Wang\*, Akari Asai\*, Xinyan Velocity Yu, Frank F. Xu, Yiqing Xie, Graham Neubig, and Daniel Fried  
*Findings of NAACL*, 2025
20. **BigCodeBench: Benchmarking Code Generation with Diverse Function Calls and Complex Instructions**  
Terry Yue Zhuo et al. (33 authors from the BigCode project)  
*International Conference on Learning Representations (ICLR)*, 2025
21. **Human-Aligned Chess with a Bit of Search**  
Yiming Zhang, Athul Paul Jacob, Vivian Lai, Daniel Fried, and Daphne Ippolito  
*International Conference on Learning Representations (ICLR)*, 2025
22. **Repetition Improves Language Model Embeddings**  
Jacob Mitchell Springer, Suhas Kotha, Daniel Fried, Graham Neubig, and Aditi Raghunathan  
*International Conference on Learning Representations (ICLR)*, 2025
23. **Dissecting Adversarial Robustness of Multimodal LM Agents**  
Chen Henry Wu, Rishi Shah, Jing Yu Koh, Ruslan Salakhutdinov, Daniel Fried, and Aditi Raghunathan  
*International Conference on Learning Representations (ICLR)*, 2025
24. **Comparative Knowledge Distillation**  
Alex Tianyi Xu\*, Alex Wilf\*, Paul Pu Liang, Alexander Obolenskiy, Daniel Fried, and Louis-Philippe Morency  
*Winter Conference on Applications of Computer Vision (WACV)*, 2024
25. **ECCO: Can We Improve Model-Generated Code Efficiency Without Sacrificing Functional Correctness?**

Siddhant Waghjale\*, Vishruth Veerendranath\*, Zora Zhiruo Wang, and Daniel Fried  
*Empirical Methods in Natural Language Processing (EMNLP), 2024*

26. **What Are Tools Anyway? A Survey from the Language Model Perspective**  
Zora Zhiruo Wang, Zhoujun Cheng, Hao Zhu, Daniel Fried, and Graham Neubig  
*Conference on Language Modeling (COLM), 2024*
27. **Human-Agent Cooperation in Games under Incomplete Information through Natural Language Communication**  
Shenghui Chen, Daniel Fried, and Ufuk Topcu  
*International Joint Conference on Artificial Intelligence (IJCAI), 2024*
28. **Evaluating Large Language Model Biases in Person-Steered Generation**  
Andy Liu, Mona T. Diab, and Daniel Fried  
*Findings of ACL, 2024*
29. **Is the Pope Catholic? Yes, the Pope is Catholic. Generative Evaluation of Intent Resolution in LLMs**  
Akhila Yerukola, Saujas Vaduguru, Daniel Fried, and Maarten Sap  
*Annual Meeting of the Association for Computational Linguistics (ACL), 2024*
30. **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  
*Annual Meeting of the Association for Computational Linguistics (ACL), 2024*
31. **TroVE: Inducing Verifiable and Efficient Toolboxes for Solving Programmatic Tasks**  
Zhiruo Wang, Graham Neubig, and Daniel Fried  
*International Conference on Machine Learning (ICML), 2024*
32. **Amortizing Pragmatic Program Synthesis with Rankings**  
Yewen Pu, Saujas Vaduguru, Priyan Vaithilingam, Elena Glassman, and Daniel Fried  
*International Conference on Machine Learning (ICML), 2024*
33. **Asking More Informative Questions for Grounded Retrieval**  
Sedrick Keh, Justin T. Chiu, and Daniel Fried  
*Findings of NAACL, 2024*
34. **Generating Pragmatic Examples to Train Neural Program Synthesizers**  
Saujas Vaduguru, Daniel Fried, and Yewen Pu  
*International Conference on Learning Representations (ICLR), 2024*
35. **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*
36. **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*
37. **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*
38. **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*
39. **Pragmatics in Language Grounding: Phenomena, Tasks, and Modeling Approaches**  
Daniel Fried\*, Nicholas Tomlin\*, Jennifer Hu, Roma Patel, and Aida Nematzadeh  
*Findings of EMNLP, 2023*
40. **Execution-Based Evaluation for Open-Domain Code Generation**  
Zhiruo Wang, Shuyan Zhou, Daniel Fried, and Graham Neubig  
*Findings of EMNLP, 2023*

41. **Data Augmentation for Code Translation with Comparable Corpora and Multiple References**  
Yiqing Xie, Atharva Naik, Daniel Fried, Carolyn Rose  
*Findings of EMNLP*, 2023
42. **AutoReply: Detecting Nonsense in Dialogue Introspectively with Discriminative Replies**  
Weiyan Shi, Emily Dinan, Adi Renduchintala, Daniel Fried, Athul Paul Jacob, Zhou Yu, and Mike Lewis  
*Findings of EMNLP*, 2023
43. **Generating Images with Multimodal Language Models**  
Jing Yu Koh, Daniel Fried, and Ruslan Salakhutdinov  
*Neural Information Processing Systems (NeurIPS)*, 2023
44. **Pragmatic Inference with a CLIP Listener for Contrastive Captioning**  
Jiefu Ou, Benno Krojer, and Daniel Fried  
*Findings of ACL*, 2023
45. **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
46. **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
47. **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
48. **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
49. **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
50. **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
51. **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
52. **G3: Geolocation via Guidebook Grounding**  
Grace Luo\*, Giscard Biamby\*, Trevor Darrell, Daniel Fried, and Anna Rohrbach  
*Findings of EMNLP*, 2022
53. **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
54. **Reference-Centric Models for Grounded Collaborative Dialogue**  
Daniel Fried, Justin Chiu, and Dan Klein  
*Empirical Methods in Natural Language Processing (EMNLP)*, 2021
55. **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

56. **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
57. **Cross-Domain Generalization of Neural Constituency Parsers**  
Daniel Fried\*, Nikita Kitaev\*, and Dan Klein  
*Annual Meeting of the Association for Computational Linguistics (ACL)*, 2019
58. **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
59. **Pragmatically Informative Text Generation**  
Sheng Shen, Daniel Fried, Jacob Andreas, and Dan Klein  
*North American Chapter of the Association for Computational Linguistics (NAACL)*, 2019
60. **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
61. **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
62. **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
63. **Effective Inference for Generative Neural Parsing**  
Mitchell Stern, Daniel Fried, and Dan Klein  
*Empirical Methods in Natural Language Processing (EMNLP)*, 2017
64. **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
65. **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
66. **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
67. **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
68. **Maps of Computer Science**  
Daniel Fried and Stephen Kobourov  
*Pacific Visualization Symposium (PacificVis)*, 2014
69. **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
70. **A Generative Probabilistic Framework for Learning Spatial Language**  
Colin Dawson, Jeremy Wright, Antons Rebguns, Marco Valenzuela Escarcega, Daniel Fried, and Paul Cohen  
*International Conference on Development and Learning*, 2013. **Best Paper Award**
71. **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

72. **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**
73. **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
74. **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
75. **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
76. **Learning Low-Rank Tensors for Transitive Verbs**  
Daniel Fried, Tamara Polajnar, and Stephen Clark  
*Advances in Distributional Semantics Workshop*, 2015
77. **Incorporating both Distributional and Relational Semantics in Word Representations**  
Daniel Fried and Kevin Duh  
*International Conference on Learning Representations (ICLR) Workshop*, 2015

#### PREPRINTS

78. **Reasoning with Latent Tokens in Diffusion Language Models**  
 Andre He, Sean Welleck\*, Daniel Fried\*  
*arXiv*, 2026
79. **Propose, Solve, Verify: Self-Play Through Formal Verification**  
 Alex Wilf, Pranjal Aggarwal, Bryan Parno, Daniel Fried, Louis-Philippe Morency, Paul Pu Liang, Sean Welleck  
*arXiv*, 2025
80. **Toward Training Superintelligent Software Agents through Self-Play SWE-RL**  
 Yuxiang Wei, Zhiqing Sun, Emily McMilin, Jonas Gehring, David Zhang, Gabriel Synnaeve, Daniel Fried, Lingming Zhang, Sida Wang  
*arXiv*, 2025
81. **Measuring Fine-Grained Negotiation Tactics of Humans and LLMs in Diplomacy**  
 Wenkai Li\*, Lynnette Hui Xian Ng\*, Andy Liu, Daniel Fried  
*arXiv*, 2025
82. **How Do AI Agents Do Human Work? Comparing AI and Human Workflows Across Diverse Occupations**  
 Zora Zhiruo Wang, Yijia Shao, Omar Shaikh, Daniel Fried, Graham Neubig, Diyi Yang  
*arXiv*, 2025
83. **Success and Cost Elicit Convention Formation for Efficient Communication**  
 Saujas Vaduguru, Yilun Hua, Yoav Artzi, Daniel Fried  
*arXiv*, 2025
84. **Analyzing Information Sharing and Coordination in Multi-Agent Planning**  
 Tianyue Ou, Saujas Vaduguru, Daniel Fried  
*arXiv*, 2025
85. **MetaLint: Generalizable Idiomatic Code Quality Analysis through Instruction-Following and Easy-to-Hard Generalization**  
 Atharva Naik, Lawanya Baghel, Dhakshin Govindarajan, Darsh Agrawal, Daniel Fried, Carolyn Rose  
*arXiv*, 2025
86. **CodeBenchGen: Creating Scalable Execution-based Code Generation Benchmarks**  
 Yiqing Xie, Alex Xie, Divyanshu Sheth, Pengfei Liu, Daniel Fried, and Carolyn Rose  
*arXiv*, 2024

<sup>\*</sup>,<sup>\*\*</sup>: equal contribution

## STUDENTS

### PhD thesis advisor:

- Andre He (with Sean Welleck)
- 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
- So Yeon (Tiffany) Min
- Anthony Sicilia (Northeastern)
- Kush Jain
- Brendon Boldt
- Nicholas Tomlin (UC Berkeley)
- Sanjay Subramanian (UC Berkeley)
- Liangke Gui
- Xing Han Liu (McGill)
- Xuhui Zhou
- Yuxiang Wei (UIUC)

## TEACHING

**Instructor: 11-891, Neural Code Generation**, CMU, 2024 – present

**Instructor: 11-777, Multimodal Machine Learning**, CMU, 2023 – present

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

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

<b>INVITED TALKS</b>	<p><i>Abstractions of Agent Actions.</i> IVADO Workshop on the Safety and Capabilities of Agents 2025.</p> <p><i>Improving NLP Systems with Speaker Listener Games.</i> Pragmatic Reasoning in Language Models Workshop, COLM 2025.</p> <p><i>Code Generation With and For Agents.</i> IVADO Bootcamp Focusing the State of Agents 2025.</p> <p><i>Improving NLP Systems with Speaker Listener Games.</i> <b>Keynote Address</b>, Society for Computation in Linguistics (SCiL) 2025.</p> <p><i>Inducing Functions to Improve LLM Agents.</i> Deep Learning For Code Workshop, ICLR 2025; REALM Workshop, ACL 2025.</p> <p><i>Planning and Inferring with LLMs for Grounded, Interactive Tasks.</i> Forum for Artificial Intelligence, UT Austin. Fall 2024</p> <p><i>Benchmarks and Tree Search for Multimodal LLM Agents.</i> SpLU-RoboNLP Workshop, ACL 2024. Summer 2024</p> <p><i>Interacting with LLMs for Grounded Tasks.</i> NILLI Workshop, EMNLP 2023. Spring 2023</p> <p><i>Interacting with (code) LLMs.</i> MIT Neurosymbolic Reading Group. Spring 2023</p> <p><i>InCoder, SantaCoder, and StarCoder: Findings from Training Open-Source Code LLMs.</i> Bloomberg AI; GitHub Next. Spring 2023</p> <p><i>Using Language Strategically in Context.</i> CoRL Workshop on Strategic Multi-Agent Interactions, 2022; Johns Hopkins University, University of Pennsylvania, UT Austin. Spring 2023</p> <p><i>Contextual Communication in Programming.</i> LTI Future of Code Generation Seminar, 2022</p> <p><i>Reasoning About Actions and Rewards in Language Interactions.</i> MIT CPL, 2022. (with Jessy Lin)</p> <p><i>Modularity in Grounded Interaction.</i> ViGIL Workshop, NAACL 2021. (with Rudy Corona)</p> <p><i>Learning Grounded Pragmatic Communication.</i> 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</p> <p><i>Pragmatic Models for Generating and Following Grounded Instructions.</i> Stanford NLP Seminar, University of Arizona, USC ISI. Fall 2018–Spring 2019</p>
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<b>ACADEMIC SERVICE</b>	<p><b>Workshop co-organizer:</b> Workshop on Large Language Models for Agents, ICLR 2024</p> <p><b>Workshop co-organizer:</b> 3rd UnImplicit Workshop, EACL 2024</p> <p><b>Workshop co-organizer:</b> 2nd UnImplicit Workshop, NAACL 2022</p> <p><b>Workshop co-organizer:</b> 2nd Advances in Language and Vision Workshop, NAACL 2021</p> <p><b>Workshop advisory board:</b> Theory of Mind in Communicating Agents, ICML 2023</p> <p><b>Outstanding reviewer awards:</b> ACL 2018, NeurIPS 2019, ACL 2020, ACL 2021, ACL 2022</p> <p><b>Senior area chair:</b> ACL 2024</p> <p><b>Area chair:</b> EMNLP 2022–2024, ACL 2023, ACL Rolling Review 2024–present</p> <p><b>Ethics chair:</b> NAACL 2024</p> <p><b>Action Editor:</b> TACL 2025–present</p> <p><b>Reviewing:</b> TACL 2022–2025; ACL Rolling Review 2021–2024; 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</p>
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