Siddharth Karamcheti

skaramcheti@cs.stanford.edu
https://www.siddkaramcheti.com/

Education

2019 – Now
GPA 4.01

Ph.D. in Computer Science at Stanford University, Stanford, CA.
- Co-advised by: Percy Liang and Dorsa Sadigh
- Supported by the *Open Philanthropy AI Fellowship* (5+ years of support)
- Focus areas: *human-robot interaction, natural language processing, robotics*

2015 – 2018
GPA 3.95

Sc.B in Computer Science. A.B. in Literary Arts at Brown University, Providence, RI.
- Graduated *magna cum laude with honors in computer science*
- Thesis: Grounding natural language to goals for abstraction, generalization, and interpretability
- Advisors: Eugene Charniak & Stefanie Tellex

2014 – 2015
GPA 3.92

First Year – Electrical Engineering & Computer Science, UC Berkeley, Berkeley, CA.
- Awarded the *Regents and Chancellor's Scholarship* (top 2% of incoming class)
- Transferred to Brown after first year to pursue interdisciplinary education in CS + Literature

Research Experience

2019 – Now
Stanford University, *Stanford, CA*.
Ph.D. Student co-advised by Percy Liang and Dorsa Sadigh
Affiliated with Stanford NLP and Robotics, as well as the Computation and Cognition Lab.
Conducting research at the intersection of shared autonomy and language for robotics + large-scale self-supervision, with additional interests in multi-modality, grounding, and interaction.

2021 – Now
Hugging Face, *Remote*.
Research Intern in Multimodality and Scaling
Affiliated with the core Science team, as well as the open-source engineering team.
Conducting research in large-scale multimodal (text, vision, video, audio) modeling, with a goal of learning powerful contextual representations.

2018 – 2019
Facebook AI Research, *New York, NY*.
AI Resident (one-year); Advised by Rob Fergus, Douwe Kiela, Jason Weston, and Arthur Szlam
Conducted research at the intersection of deep reinforcement learning and natural language processing; additional work in text-based games.

2017 – 2018
Bloomberg LP – CTO Research Group, *New York, NY*.
Research Intern (Summer '17, '18, Part-Time '17-'18); Advised by Gideon Mann and David Rosenberg
Conducted research in automated bug detection ("fuzzing") using machine learning, active learning.

2016 – 2018
Human to Robots (H2R) Lab – Brown University, *Providence, RI*.
Undergraduate Research Assistant; Advised by Stefanie Tellex.
Conducted research in human-robot interaction: instruction following for mobile manipulation.

2016 – 2018
Brown Lab for Linguistic Information Processing (BLLIP), *Providence, RI*.
Undergraduate Research Assistant; Advised by Eugene Charniak.
Research in computational social science, semantic parsing, and question-answering.

Engineering Experience

2016
Wealthfront Inc., *Redwood City, CA*.
Software Engineering Intern
Backend software intern primarily working on data workflows, risk services.

2015
WriteLab Inc., *Berkeley, CA*.
Natural Language Processing Intern
NLP engineering intern, built systems for topic and entity tracking across large-scale documents (essays & academic papers), as well as topic dependencies.

2013   **Autogrid Systems**, *Redwood City, CA*.
Software Engineering Intern
Helped build out in-house development and testing infrastructure, transitioned to machine learning, feeding data to generalized machine learning models to predict energy demand spikes.

Honors and Awards

2021   Outstanding Reviewer Award at EMNLP.

2021   Outstanding Paper award at ACL-IJCNLP for "Mind Your Outliers! Investigating the Negative Impact of Outliers on Active Learning for Visual Question Answering." Awarded to the top 5 (0.2%) out of 3000+ submissions.

2021   Outstanding Reviewer Award at ACL-IJCNLP.

2019   Open Philanthropy Project AI Fellowship, offering full funding for 5+ years of the PhD, and access to broader network of fellows and affiliated research scientists.

2018   Selected for the inaugural Facebook AI Residency, 1/11 out of 2000+ applications.

2018   University Distinguished Thesis Nominee, Brown Computer Science. Sole CS-department nominee for University-wide undergraduate thesis prize.

2018   Honorable Mention – Computing Research Association (CRA) Outstanding Undergraduate Researcher Prize. One of 45 student recognized in nationwide competition.

2018   Senior Prize, Brown University Computer Science Department. Recognized for outstanding record in research, teaching, and service.

2017   Best Paper Award at RoboNLP Workshop @ ACL 2017 for "A Tale of Two DRAGGNs: Interpreting Action and Goal-Oriented Instructions."

2014   Regents and Chancellor's Scholarship – UC Berkeley. One of 200 incoming undergraduates recognized with the scholarship, as determined by the Academic Senate.

Peer-Reviewed Academic Publications

NeurIPS 2021   **ELLA: Exploration through Learned Language Abstraction**.
Suvir Mirchandani, **Siddharth Karamcheti**, Dorsa Sadigh
Advances in Neural Information Processing Systems (NeurIPS), 2021

CoRL 2021   **LILA: Language-Informed Latent Actions**.
Siddharth Karamcheti*, Megha Srivastava*, Percy Liang, Dorsa Sadigh
Conference on Robot Learning (CoRL), 2021

ACL 2021   **Mind Your Outliers! Investigating the Negative Impact of Outliers on Active Learning for Visual Question Answering**.
Siddharth Karamcheti, Ranjay Krishna, Li Fei-Fei, Christopher D. Manning
Annual Meeting of the Association of Computational Linguistics (ACL-IJCNLP), 2021
Outstanding Paper Award (top 5 / 3000+ submissions) | Main Stage Presentation

ICML 2021   **Targeted Data Acquisition for Evolving Negotiation Agents**.
Minae Kwon, **Siddharth Karamcheti**, Mariano-Florentino Cuéllar, Dorsa Sadigh
International Conference on Machine Learning (ICML), 2021

L4DC 2021   **Learning Visually Guided Latent Actions for Assistive Teleoperation**.
Siddharth Karamcheti, Albert J. Zhai, Dylan P. Losey, Dorsa Sadigh
Learning for Dynamics and Control (L4DC), 2021

IntEx-SemPar 2020   **Learning Adaptive Language Interfaces through Decomposition**.
Siddharth Karamcheti, Dorsa Sadigh, Percy Liang
Workshop for Interactive and Executable Semantic Parsing (IntEx-SemPar) @ EMNLP, 2020

AAAI 2020	**Generating Interactive Worlds with Text**. Angela Fan*, Jack Urbanek*, Pratik Ringshia, Emily Dinan, Emma Qian, **Siddharth Karamcheti**, Shrimai Prabhumoye, Douwe Kiela, Tim Rocktäshel, Arthur Szlam, Jason Weston *Association for the Advancement of Artificial Intelligence (AAAI), 2020*
EMNLP 2019	**Finding Generalizable Evidence by Learning to Convince Q&A Models**. Ethan Perez, **Siddharth Karamcheti**, Rob Fergus, Jason Weston, Douwe Kiela, Kyunghyun Cho *Empirical Methods in Natural Language Processing (EMNLP), 2019* **Learning to Speak and Act in a Fantasy Text Adventure Game**. Jack Urbanek, Angela Fan, **Siddharth Karamcheti**, Saachi Jain, Samuel Humeau, Emily Dinan, Tim Rocktäshel, Douwe Kiela, Arthur Szlam, Jason Weston *Empirical Methods in Natural Language Processing (EMNLP), 2019*
ML4SE 2019	**Improving Grey-Box Fuzzing by Modeling Program Control Flow**. **Siddharth Karamcheti**, Gideon Mann, David Rosenberg *Workshop on Machine Learning for Software Engineering (ML4SE), 2019*
AuRO 2019	**Grounding Natural Language Instructions to Semantic Goal Representations for Abstraction and Generalization**. Dilip Arumugam*, **Siddharth Karamcheti***, Nakul Gopalan, Edward C. Williams, Mina Rhee, Lawson L.S. Wong, Stefanie Tellex *Journal – Autonomous Robots (AuRO), 2019*
AISEC 2018	**Adaptive Grey-Box Fuzz Testing with Thompson Sampling**. **Siddharth Karamcheti**, Gideon Mann, David Rosenberg *ACM Workshop on Artificial Intelligence and Security (AISEC), 2018* Oral Presentation
RoboNLP 2017	**A Tale of Two DRAGGNs: Interpreting Action and Goal-Oriented Instructions**. **Siddharth Karamcheti**, Edward C. Williams, Dilip Arumugam, Mina Rhee, Nakul Gopalan, Lawson L.S. Wong, Stefanie Tellex *Workshop in Language Grounding for Robotics (RoboNLP) @ ACL, 2017* Best Paper Award	Oral Presentation
RSS 2017	**Accurately and Efficiently Interpreting Human-Robot Instructions of Varying Granularities**. Dilip Arumugam*, **Siddharth Karamcheti***, Nakul Gopalan, Lawson L.S. Wong, Stefanie Tellex *Robotics: Science and Systems (RSS), 2017*

Manuscripts & Non-Archival Publications

Mistral	**Mistral: A Journey towards Reproducible Language Model Training**. **Siddharth Karamcheti*** and Laurel Orr* Codebase & associated writeup detailing our journey in scaling large-scale language model pre-training as part of the development team for the Center for Research on Foundation Models. Blog || Code & Checkpoints
Foundation Models	**On the Opportunities & Risks of Foundation Models**. Center for Research on Foundation Models (100+ authors across Stanford) - led by Percy Liang *Sections Authored:* ○ *Robotics*: **Siddharth Karamcheti** (lead author), Annie Chen, Suvir Mirchandani, Suraj Nair, Krishnan Srinivasan, Kyle Hsu, Jeannette Bohg, Dorsa Sadigh, Chelsea Finn ○ *Interaction*: Joon Sung Park, Chris Donahue, Mina Lee, **Siddharth Karamcheti**, Dorsa Sadigh, Michael Bernstein
Undergraduate Thesis	**Grounding Natural Language to Goals for Abstraction, Generalization and Interpretability**. **Siddharth Karamcheti** – Submitted for fulfillment of Sc. B. Honors in Computer Science Thesis Committee: Stefanie Tellex, Eugene Charniak, George Konidaris Nominated for University-level honors (sole CS Department nominee)

Teaching Experience

2017-2018   **Head Teaching Assistant for Brown CS 1380: Distributed Systems**.
Taught by Theophilius Benson; Managed a staff of 5 TAs to design assignments, grade, and hold additional tutorial sections and office hours. Built new projects on block-chains & cryptocurrencies.

2016-2017,   **Head Teaching Assistant for Brown CS 2950K/1470: Deep Learning**.
2017-2018   Taught by Eugene Charniak; 2016-2017 was first offering of the class, led a group of 2 other TAs in designing and implementing all projects in Tensorflow 0.4, pulling from topics across NLP, Vision, and Reinforcement Learning. 2017-2018 class grew in size, led a team of 12+ TAs.

2016-2017   **Head Teaching Assistant for Brown CS 1460: Computational Linguistics**.
Taught by Eugene Charniak; rewrote assignments in language modeling, machine translation, parsing, topic modeling, and deep learning for representation learning, managing a team of 7 TAs.

Professional Activities

Leadership

2020 – 2022   Lead (w/ Laurel Orr) the development, or "propulsion" team for the Center of Research on Foundation Models (CRFM), advised by Percy Liang

Workshop & Symposia Organization

2022   Lead organizer for the "Workshop on Learning from Diverse, Offline Data (L-DOD)" at *Robotics: Science and Systems*, with Suraj Nair (Stanford), Dhruv Shah (UC Berkeley), Victoria Dean (CMU), and Professors Percy Liang (Stanford), Chelsea Finn (Stanford), and Dorsa Sadigh (Stanford).

2021   Co-organizer for the "Bay Area Robotics Symposium (BARS)" with Professors Dorsa Sadigh (Stanford), Mark Mueller (UC Berkeley), and fellow student Erdem Biyik (Stanford).

Journal & Conference Reviewer

NLP
- ACL Rolling Review (ARR): October 2021 – Now (Monthly)
- Association for Computational Linguistics (ACL): 2020, 2021 (Outstanding Reviewer)
- Empirical Methods in Natural Language Processing (EMNLP): 2020, 2021
- North American Association for Computation Linguistics (NAACL): 2020, 2021

Robotics
- ACM/IEEE Conference on Human-Robot Interaction (HRI): 2022
- Robotics & Automation – Letters (RA-L): 2020, 2021
- International Conference on Robotics & Automation (ICRA): 2020, 2021
- Conference on Robot Learning (CoRL): 2021

ML
- International Conference on Learning Representations (ICLR): 2022
- International Conference on Machine Learning (ICML): 2021

Workshop Reviewer

NLP
- Novel Ideas in Learning to Learn from Interaction (NILLI) @ EMNLP: 2021
- Spatial Language Understanding and Grounded Communication for Robotics (Splu-RoboNLP) @ ACL: 2021
- Interactive Learning for Natural Language Processing (InterNLP) @ ACL: 2021
- Visually Grounded Interaction and Language (ViGiL) @ NAACL: 2021

Robotics	○	Robot Learning: Self-Supervised & Lifelong Learning @ NeurIPS: 2021
	○	Social Intelligence in Humans and Robotics @ ICRA: 2021
ML	○	Controllable Generation (CtrlGen) @ NeurIPS: 2021
	○	Interactive Machine Learning Workshop (IML) @ AAAI: 2022

University Service

2020 – Now	Editor for the Stanford Artificial Intelligence Blog; responsible editing student-authored posts and managing the blog website.
2019 – 2021	Organized weekly Grounding & Interaction Reading/Research group bringing together students and faculty from NLP, CV, RL, Robotics, and beyond to discuss and present recent work.
2020 – 2021	Reviewed Ph.D. applications for Stanford's Computer Science department as part of the Applications Committee