Archiki Prasad

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Research Interests

My research goal is to build natural language processing systems that can reason in an efficient, robust, and interpretable manner.

Major Interests: Reasoning and Decision-making, Robustness, Self-Supervised Learning.
Other Interests: Compositional Learning, Explainability, Robustness.

Education

Present – Aug 2021 | **The University of North Carolina, Chapel Hill, USA**
Ph.D. in Computer Science | *Advisor: Mohit Bansal*
Concentration: Natural Language Processing

May 2021 – August 2016 | **Indian Institute of Technology Bombay, Maharashtra, India**
Bachelor + Master of Technology, Major: Electrical Engineering | **GPA:** 9.66/10
Minor: Computer Science and Engineering

Experience

Present – Aug 2021 | **UNC-NLP Research Group, UNC Chapel Hill, US**
Research Assistant | *Advisor: Mohit Bansal*
› Improving reasoning, planning, and coding abilities of large language and multimodal models

Aug 2024 – May 2024 | **Fundamental AI Research Labs, Meta, New York City, US**
Research Scientist Intern | *Advisors: Jason Weston, Maryam Fazel-Zarandi*
› Enabling LLMs to learn to reason in an iterative and unsupervised manner

Aug 2023 – May 2023 | **Allen Institute of Artificial Intelligence (AI2), Seattle, US**
Research Intern (Aristo) | *Advisors: Tushar Khot, Ashish Sabharwal, Peter Clark*
› Designed an adaptive task decomposition framework for LLM agents on interactive tasks

Aug 2022 – May 2022 | **Adobe Research, San Jose (Remote), US**
Research Scientist Intern (NLP) | *Advisors: Trung Bui, David Yoon, Franck Dernoncourt*
› Developed a challenging benchmark on extracting question-answer pairs from meeting transcripts

May 2021 – Aug 2019 | **Computational Speech And Language Technologies (CSALT) Lab, IIT Bombay, India**
Research Assistant | *Advisor: Preethi Jyothi*
› Modeling accents and noise robustness for automatic speech recognition systems
› Improving language modeling and understanding for code-switched languages

Jul 2019 – May 2019 | **Adobe Research, Bangalore, India**
Research Intern | *Advisor: Shiv Kumar Saini*
› Worked on time-series forecasting in low/zero-data settings using memory-augmented networks

Publications

2024 **Archiki Prasad**, Weizhe Yuan, Richard Yuanzhe Pang, Jing Xu, Maryam Fazel-Zarandi, Mohit Bansal, Sainbayar Sukhbaatar, Jason Weston, Jane Yu *"Self-Consistency Preference Optimization"* Arxiv Preprint 2024 [PDF]

2024 Duy Nguyen*, **Archiki Prasad***, Elias Stengel-Eskin, Mohit Bansal *"LASeR: Learning to Adaptively Select Reward Models with Multi-Armed Bandits"* Arxiv Preprint 2024 [PDF]

2024 Justin Chih-Yao Chen, **Archiki Prasad**, Swarnadeep Saha, Elias Stengel-Eskin, Mohit Bansal *"MAgICoRe: Multi-Agent, Iterative, Coarse-to-Fine Refinement for Reasoning"* Arxiv Preprint 2024 [PDF]

2024 Han Wang, **Archiki Prasad**, Elias Stengel-Eskin, Mohit Bansal *"AdaCAD: Adaptively Decoding to Balance Conflicts between Contextual and Parametric Knowledge"* Arxiv Preprint 2024 [PDF]

2024 Swarnadeep Saha, **Archiki Prasad**, Justin Chih-Yao Chen, Peter Hase, Elias Stengel-Eskin, Mohit Bansal *"System-1.x: Learning to Balance Fast and Slow Planning with Language Models"* Arxiv Preprint 2024 [PDF]

2024 Elias Stengel-Eskin*, **Archiki Prasad***, Mohit Bansal *"REGAL: Refactoring Programs to Discover Generalizable Abstractions"* In Proceedings of the forty-first International Conference on Machine Learning (**ICML 2024**) [PDF]

2024 **Archiki Prasad**, Elias Stengel-Eskin, Mohit Bansal *"Rephrase, Augment, Reason: Visual Grounding of Questions for Vision-Language Models"* In Proceedings of the twelfth International Conference on Learning Representations **(ICLR 2024)** [PDF]

2024 **Archiki Prasad**, Alexander Koller, Mareike Hartmann, Peter Clark, Ashish Sabharwal, Mohit Bansal, Tushar Khot *"ADaPT: As-Needed Decomposition and Planning with Language Models"* In Findings of Conference of the North American Chapter of the Association for Computational Linguistics **(Findings of NAACL 2024)** [PDF]

2024 Han Wang*, **Archiki Prasad***, Elias Stengel-Eskin*, Mohit Bansal *"Soft Self-Consistency Improves Language Model Agents"* In Proceedings of the Annual Conference of the Association for Computational Linguistics **(ACL 2024)** [PDF]

2023 **Archiki Prasad**, Swarnadeep Saha, Xiang Zhou, Mohit Bansal *"ReCEval: Evaluating Reasoning Chains via Correctness and Informativeness"* In Proceedings of Conference on Empirical Methods in Natural Language Processing **(EMNLP 2023)** [PDF]

2023 **Archiki Prasad**, Trung Bui, Seunghyun Yoon, Hanieh Deilamsalehy, Franck Dernoncourt, Mohit Bansal *"MeetingQA: Extractive Question-Answering on Meeting Transcripts"* In Proceedings of the Annual Conference of the Association for Computational Linguistics **(ACL 2023)** [PDF]

2023 **Archiki Prasad**, Peter Hase, Xiang Zhou, Mohit Bansal *"GrIPS: Gradient-free, Edit-based Instruction Search for Prompting Large Language Models"* In Proceedings of the Conference of the European Chapter of the Association for Computational Linguistics **(EACL 2023)** [PDF]

2021 **Archiki Prasad***, Mohammad Ali Rehan*, Shreya Pathak*, Preethi Jyothi *"The Effectiveness of Intermediate-Task Training for Code-Switched Natural Language Understanding"* In Proceedings of the Workshop on Multilingual Representation Learning **(MRL 2021) at EMNLP 2021** [PDF] (Best Paper Honorable Mention)

2021 **Archiki Prasad**, Preethi Jyothi, Rajbabu Velmurugan *"An Investigation of End-to-End Models for Robust Speech Recognition"* In Proceedings of IEEE International Conference on Acoustics, Speech and Signal Processing **(ICASSP 2021)** [PDF]

2021 **Archiki Prasad**, Vishal Jain, Sharayu Moharir *"Decentralized Age-of-Information Bandits"* In Proceedings of the IEEE Wireless Communications and Networking Conference **(WCNC 2021)** [PDF]

2020 **Archiki Prasad**, Preethi Jyothi *"How Accents Confound: Probing for Accent Information in End-to-End Speech Recognition Systems"* In Proceedings of the 2020 Annual Conference of the Association for Computational Linguistics **(ACL 2020)** [PDF]

2020 Ayush Chauhan, **Archiki Prasad**, Parth Gupta, Amiredddy Prashanth Reddy, Shiv Kumar Saini *"Time Series Forecasting for Cold-Start Items by Learning from Related Items using Memory Networks"* In Companion Proceedings of the Web Conference 2020 **(WWW 2020)** [PDF]

Patents

2022 Ayush Chauhan, Shiv Kumar Saini, Parth Gupta, **Archiki Prasad**, Amireddy Prashanth Reddy, and Ritwick Chaudhry *"Key-value memory network for predicting time-series metrics of target entities"* US Patent and Trademarks Office 2022 | Adobe Inc. [US11501107]

Invited Talks

Microsoft Turing Speaker Series Spring 2024
"As-Needed Decomposition and Planning with Language Models" [slides]

Honors and Awards

- IIT Bombay Institute Academic Prize for outstanding performance in the academic year 2019-20
- Secured an all India rank of 144 in JEE-Main 2016 out of roughly 10 million applicants.
- Amongst top 1.2% of all selected candidates (200,000) JEE-Advance 2016.
- Google participation award for Multilingual Representation Learning 2021.
- Advanced Performer's grade (about top 1% of class) in Linear Algebra and Economics

Professional Services

Conference Reviewer

- EMNLP 2021-2024
- ACL 2022-2024 (ACL Rolling Review)
- NAACL 2022-2024 (ACL Rolling Review)

References

- Mohit Bansal, John R. Louise S. Parker Professor of CS, UNC Chapel Hill.
- Jason Weston, Senior Director Research Scientist, FAIR Labs, Meta, NYC.
- Tushar Khot, Lead Research Scientist, Allen Institute of Artificial Intelligence, Seattle.
- Ashish Sabharwal, Principal Research Scientist, Allen Institute of Artificial Intelligence, Seattle.