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, Compositional Learning, Prompt-based Learning.
Other Interests: Self-Supervised Learning, Explainability, Multilinguality.

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
- Working on prompt-based learning methods with large language and multimodal models
- Working on consistency and reasoning with language models

Aug 2023 – May 2023 | **Allen Institute of Artificial Intelligence (AI2), Seattle, US**
Research Intern, Aristo | Advisors: Tushar Khot, Ashish Sabharwal
- Working on a flexible, hierarchical, and dynamic decomposition framework for reasoning with LLMs

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
- Intermediate-task training for natural language understanding tasks in code-switched languages
- Probing accent information in black-box end-to-end automatic speech recognition systems
- Joint noise and accent robustness in automatic speech recognition systems

Jan 2021 – Jan 2020 | **Indian Institute of Technology Bombay, Maharashtra, India**
Research Assistant | Advisor: Sharayu Moharir
- Worked on designing scheduling policies using multi-armed bandits

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

2023 Archiki Prasad, Alexander Koller, Mareike Hartmann, Peter Clark, Ashish Sabharwal, Mohit Bansal, Tushar Khot *"ADaPT: As-Needed Decomposition and Planning with Language Models"* Arxiv Preprint [PDF]

2023 Archiki Prasad, Elias Stengel-Eskin, Mohit Bansal *"Rephrase, Augment, Reason: Visual Grounding of Questions for Vision-Language Models"* Arxiv Preprint [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 2023 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 17th 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 2021 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 the 2021 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 2021 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]

Honors and Awards

- IIT Bombay Institute Academic Prize for outstanding performance in the academic year 2019-20
- Amongst top 1.2% of all selected candidates (200,000) JEE-Advance 2016 and amongst top 0.1% of all candidates in JEE-Mains 2016.
- Google participation award for MRL 2021.
- Advanced Performer's grade (about top 1% of class) in Linear Algebra and Economics

Professional Services

Conference Reviewer

- EMNLP 2021-2023
- ACL 2022-2023 (ACL Rolling Review)
- NAACL 2022 (ACL Rolling Review)

Relevant Coursework

* = Graduate Level Courses

Mathematics: Linear Algebra*, Real Analysis, Complex Analysis, Multivariate Calculus, Differential Equations

Computer Science: Computer Programming, Data Structures and Algorithms, Operating Systems, Computer Organization, Digital Logic

Machine Learning: Machine Learning*, Structured Prediction*, Language & Learning*, Large Language Models*, Connecting Language to Vision & Robotics*, Information Theory & Coding*, Automatic Speech Recognition*, Natural Language Processing, Digital Image Processing

Probability and Statistics: Probability and Random Processes, Data Analysis and Interpretation, Concentration Inequalities*

Skills

Programming Languages:	C/C++, Python, R, bash
SW/ Tools:	MATLAB, Scilab, Git, Docker, LaTeX, Arduino, Quartus
ML Libraries:	TensorFlow, PyTorch, Keras, NumPy, OpenCV, Pandas, Scikit Learn

References

- Mohit Bansal, John R. Louise S. Parker Professor of CS, UNC Chapel Hill.
- Tushar Khot, Research Scientist, Allen Institute of Artificial Intelligence, Seattle.
- Ashish Sabharwal, Senior Research Scientist, Allen Institute of Artificial Intelligence, Seattle.
- Trung Bui, Senior Research Scientist, Adobe Research, San Jose
- Franck Dernoncourt, NLP Researcher, Adobe Research, Seattle
- Preethi Jyothi, Associate Professor of CS, Indian Institute of Technology Bombay