

# Nikhil Prakash

Khoury College of Computer Sciences  
Northeastern University  
Boston, MA, USA  
✉ [prakash.nik@northeastern.edu](mailto:prakash.nik@northeastern.edu)  
🌐 [nix07.github.io](https://nix07.github.io)

## Research Interests

I'm interested in understanding the internal mechanisms of deep neural networks to enhance human-AI collaboration and prevent misalignment.

## Education

- Sept 2022 – **Ph.D.**, *Northeastern University*, Boston, Massachusetts.  
May 2027\* Computer Science, Bau Lab (advisor: Prof. David Bau 🌐)  
GPA: 4/4
- Aug 2016 – **Bachelor of Eng.**, *RV College of Eng.*, Bangalore, India  
Aug 2020 Department of Telecommunication  
Cumulative GPA: 8.31/10 (First Class with Distinction)

## Peer-Reviewed Publications

### Conference publications

- ICLR 2024 **Fine-Tuning Enhances Existing Mechanisms: A Case Study on Entity Tracking**  
[Nikhil Prakash](#), Tamar Rott Shaham, Tal Haklay, Yonatan Belinkov, David Bau  
International Conference on Learning Representations 2024.
- IUI 2023 **Supporting Requesters in Writing Clear Crowdsourcing Task Descriptions Through Computational Flaw Assessment**  
Zahra Nouri, [Nikhil Prakash](#), Ujwal Gadiraju, Henning Wachsmuth  
Intelligent User Interfaces 2023.

### Journal publications

- TMLR  
(Under Review) **The Quest for the Right Mediator: A History, Survey, and Theoretical Grounding of Causal Interpretability**  
Aaron Mueller, Jannik Brinkmann, Millicent Li, Samuel Marks, Koyena Pal, [Nikhil Prakash](#), Can Rager, Aruna Sankaranarayanan, Arnab Sen Sharma, Jiuding Sun, Eric Todd, David Bau, Yonatan Belinkov  
Transactions on Machine Learning Research

### Workshop and demonstration publications

- ICML 2023 **Discovering Variable Binding Circuitry with Desiderata**  
Xander Davies\*, Max Nadeau\*, [Nikhil Prakash\\*](#), Tamar Rott Shaham, David Bau  
Workshop on Challenges in Deployable Generative AI, International Conference on Machine Learning 2023.

- HCOMP 2021 **iClarify – A Tool to Help Requesters Iteratively Improve Task Descriptions in Crowdsourcing**  
Zahra Nouri, [Nikhil Prakash](#), Ujwal Gadiraju, Henning Wachsmuth  
Work-in-Progress & Demonstration, Human Computation and Crowdsourcing 2021.
- NeurIPS 2020 **Conceptualization and Framework of Hybrid Intelligence Systems**  
[Nikhil Prakash](#) and Kory W. Mathewson  
Human And Machine in-the-Loop Evaluation and Learning Strategies Workshop, Neural Information Processing Systems 2020.
- COMSNETS 2019 **A Grid-based Model for Generating Scale-Free Networks**  
Amit Kumar Verma and [Nikhil Prakash](#)  
Social Networking Workshop, Conference on Communication Systems & Networks 2019.






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## Other Publications

- ArXiv 2024 **NNsight and NDIF: Democratizing Access to Foundation Model Internals**  
Jaden Fiotto-Kaufman, Alexander R Loftus, Eric Todd, Jannik Brinkmann, Caden Juang, Koyena Pal, Can Rager, Aaron Mueller, Samuel Marks, Arnab Sen Sharma, Francesca Lucchetti, Michael Ripa, Adam Belfki, [Nikhil Prakash](#), Sumeet Multani, Carla Brodley, Arjun Guha, Jonathan Bell, Byron Wallace, David Bau.

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## Work Experience

- July–August 2024 **Practical AI Alignment and Interpretability Research (Pr(Ai)<sup>2</sup>R) Group, Research Intern**  
Mechanistically investigating *theory of mind* capabilities in language models, mentored by Atticus Geiger .
- June–July 2023 **Stanford Existential Risks Initiative ML Alignment Theory Scholars (SERI-MATS)**  
Investigated superposition in attention heads of GPT2-XL that retrieve factual information from subject token residual stream, mentored by Neel Nanda .
- June 2023 **Alignment Research Engineer Accelerator (ARENA)**  
Participated in this fully-funded upskilling initiative focused on technical AI alignment research.
- Jan–Aug 2022 **Max Planck Institute for Security and Privacy (MPI-SP), Visiting Scholar**  
Worked under the supervision of Prof. Asia J. Biega  to conduct exploratory user studies for investigating well-being of microtask crowdworkers.
- May 2021–Sept 2022 **Delft University of Technology (TU Delft), Research Assistance (Voluntary)**  
Worked under the supervision of Prof. Ujwal Gadiraju  and Prof. Henning Wachsmuth , to develop an assistive tool that would help crowdsourcing requesters in creating clear task descriptions quickly.
- Sept 2020–Jan 2022 **Accolite Software India, Senior Software Engineer**  
Worked as full-stack engineer to design, develop, and maintain complex production-ready web applications. Primary technology stack was Angular, Java, and IBM DB2.

- Jan–May 2020 & June–Aug 2019 **Korea Advanced Institute of Science and Technology (KAIST)**, *Visiting Student Researcher*  
Worked under the supervision of Prof. Juho Kim  to develop an intelligent interactive system for personalizing food recipes based on users' preferences and dietary constraints.
- May–June 2019 **Samsung R&D Institute India - Bangalore**, *Student Trainee*  
Worked as a student trainee at Samsung Research, Bangalore (SRIB) in the Service PF team to design and develop the offline newsfeed functionality in the Samsung Internet.
- June–July 2018 **Indian Institute of Technology, Ropar (IIT Ropar)**, *Research Intern*  
Worked under the supervision of Prof. Sudarshan Iyengar  to investigate the dynamics of collaboration process on English Wikipedia.

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## Invited Talks

- 2024 Practical AI Alignment and Interpretability Research Group.
- 2024 Computational Linguistics and Complex Social Networks Group at Indian Institute of Technology Gandhinagar.
- 2024 New England NLP 2024, Brown University.

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## Fellowships and Awards

- 2024 Google Gemma Academic Program GCP Credit Award, worth \$5k.
- 2022 Khoury College of Computer Sciences start-up fund, worth \$5k.
- 2020 NeurIPS complimentary registration (Travel Award), worth \$100.
- 2020 ACM CoDS-COMAD Student Travel Grant, worth \$80.

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## Voluntary Services

- 2024 Reviewer for ICLR 2025.
- 2024 Reviewer for Interpretable AI: Past, Present and Future and ATTRIB workshops at Neurips 2024.
- 2024 Reviewer for NeurIPS 2024 (main conference & workshop proposals).
- 2024 Co-organizing Mechanistic Interpretability Social at ICLR 2024.
- 2023 Program committee member of ATTRIB 2023 workshop at NeurIPS.
- 2022 Student volunteer at Ph.D. admissions committee to review prospective Ph.D. student applications.
- 2019 Student volunteer at India HCI.

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## Engineering Skills

- Languages Python, C++, Java, JavaScript, HTML, CSS, SQL
- Technologies & Frameworks PyTorch, Transformers, Nnsight, Transformer-lens, Scikit-learn, NLTK, Pandas, Numpy, Angular, Bootstrap, jQuery, Docker, Linux