# Neha Makhija
nehamakhija.github.io

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## RESEARCH INTERESTS

My research interests lie in the theory and practice of Data Management - including, but not limited to: studying query explanations, probabilistic / uncertain data management, and knowledge representation. The overarching goal with across problems is to discover conditions under which we can solve generally "hard" problems efficiently.

## EMPLOYMENT

- Assistant Professor                                                                      Sept 2025 - Present
  Manning College of Computer and Information Science
  University of Massachusetts, Amherst

## EDUCATION

- PhD in Computer Science                                                          Sept 2019 - August 2025
  DataLab at Northeastern University, Khoury College of Computer Sciences
  Advised by: Dr. Wolfgang Gatterbauer
  PhD Thesis: Reverse Query Optimization

- Bachelor of Engineering (Computer Engineering)                                              2015 - 2019
  Thadomal Shahani Engineering College, University of Mumbai                            GPA: 9.15 / 10

## PUBLICATIONS

- Is Integer Linear Programming All You Need for Deletion Propagation? A Unified and Practical Approach for Generalized Deletion Propagation  [**VLDB 2025**]
  *Neha Makhija,Wolfgang Gatterbauer*
  [PVLDB] [Arxiv (long version)] [OSF]

- Resilience for Regular Path Queries: Towards a Complexity Classification  [**PODS 2025**]
  *Antoine Amarilli, Wolfgang Gatterbauer, Neha Makhija, Mikaël Monet*
  [ACM] [Arxiv (long version)]

- A Unified Approach for Resilience and Causal Responsibility with Integer Linear Programming (ILP) and LP Relaxations  [**SIGMOD 2024**]
  *Neha Makhija,Wolfgang Gatterbauer*
  [ACM] [Arxiv (long version)] [Webpage] [Slides] [Video]

- Minimally Factorizing the Provenance of Self-Join Free Conjunctive Queries  [**PODS 2024**]
  *Neha Makhija,Wolfgang Gatterbauer*
  [ACM] [Arxiv (long version)] [Slides] [Video]

- Discovering Dichotomies for Problems in Database Theory  [**VLDB PhD Workshop 2023**]
  *Neha Makhija,Wolfgang Gatterbauer*
  [VLDB] [Arxiv] [Webpage]

- Loch Prospector: Metadata Visualization for Lakes of Open Data
  *Neha Makhija, Mansi Jain, Nikolaos Tziavelis, Laura Di Rocco, Sara Di Bartolomeo, Cody Dunne*
  [**Short Paper at IEEE VIS 2020**]
  [IEEE VIS] [OSF] [Video] [Teaser] [Webpage]

## Experience

- **Simons Institute, University of California, Berkeley,** Visiting Graduate Student    Aug - Dec 2023
  Workshop on "Logic and Algorithms in Database Theory and AI" [Workshop Webpage]
  Invited Talk: "A Unified Approach for Reverse Data Management" [Talk Webpage] [Video]

- **RelationalAI,** Summer Research Intern    May - Aug 2023

- **RelationalAI,** Summer Research Intern    May - Aug 2022

- **IBM Research, Yorktown Heights,** Summer Research Intern    May - Aug 2021

- **Ushva Clean Technology,** Machine Learning Intern    Nov 2017 - Aug 2018

## Honours & Awards

- Khoury Research Award [Announcement]    2025

- VLDB Travel Award    2023

- Graduate Fellowship, Northeastern University    2019

- Principal's Award of Excellence, Thadomal Shahani Engineering College    2019

- Leadership Award, Thadomal Shahani Engineering College    2019

## Teaching And Mentoring

- CS345: Practice and Applications of Data Management at UMass, Amherst    Spring 2026

- ERSP Mentor at UMass, Amherst    2026-2027

- Research Co-op Mentor for Undergraduate student Yihan Luo for the project 'Building an Intuitive Reverse Data Management System'    Fall 2024

- Teaching Assistant, CS7240: Principles of Scalable Data Management: Theory, Algorithms and Database Systems at Northeastern University    Spring 2023

- Head Teaching Assistant, CS3200: Database Design at Northeastern University    Fall 2022

## Professional Activities and Service

- Program Committee Member, ACM SIGMOD 2027

- Program Committee Member, ACM PODS 2027

- Invited Reviewer for ACM TODS (Transactions on Database Systems), ACM TOCL (Transactions on Computational Logic)

- Program Committee Co-Chair, Northeast Database Day 2026

- Program Committee Member, ACM SIGMOD 2026 (Rounds 3 and 4)

- PhD Admissions Committee, UMass Amherst CICS    2025-2026

- Reviewer, VLDB 2025

- Organizer, DataLab Seminar    Fall 2024, Spring 2023

- Microsoft TEALs : Volunteer at Match Charter Public High School Boston    2021-2022

- MIT Spark 2022: 'Introduction to Graph Theory (With Puzzles!)' [Slides]

- Organizer, Northeastern PhD Open House 2022

- Co-founder/Lead, TSEC CodeCell 2017-2019

## Talks and Posters

- A Unified Approach for Reverse Data Management

  - Data Management and Mining Laboratory Seminar, University of British Columbia — Oct 2024
  - Data Labs Seminars, University of Illinois Chicago — Oct 2024
  - Databases and Information Systems Seminar, Humboldt-Universität zu Berlin — Oct 2024
  - Northeast Database Day 2024 [Slides] — May 2024
  - Database Seminar, University of California San Diego — Feb 2024
  - Northeastern University Theory Lunch — Feb 2024
  - UtahDB Lab Seminar, University of Utah — Nov 2023
  - Cornell Database Seminar — Sept 2023
  - VLDB PhD Workshop — Aug 2023
  - Data Systems Group at MIT CSAIL — March 2023

- A Unified Approach for Resilience and Causal Responsibility

  - SIGMOD 2024 [Slides] [Video] — June 2024
  - Institute of Algebra, TU Dresden — March 2024

- Minimally Factorizing the Provenance of Self-Join Free Conjunctive Queries

  - PODS 2024 [Slides] [Video] — June 2024
  - Boston Computation Club — August 2021

- Loch Prospector: Meta Data Visualization for Lakes of Open Data

  - IEEE VIS 2020 [Video] [Teaser] — October 2020