Abhraneel Sarma

abhraneel@u.northwestern.edu　●　abhsarma.github.io

Research Interests

Broadly: I am interested in studying how people make sense of uncertainty information which arise in a typical data analysis pipeline.

Recently: I have developed tools which help analysts to specify the uncertainty in their data analysis process itself (the multiverse R library), visualise the results of such *specification* uncertainty, and conducted studies to understand how users interpret uncertainty information in missing data contexts, and how we can improve decision making in exploratory data analysis to account for multiple comparisons.

Education

2019-	**PhD, Computer Science, Northwestern University** Advisors: Matthew Kay, Jessica Hullman
2016–2018	**Master of Science, Information, University of Michigan** HCI and Data Science specialization Advisor: Matthew Kay
2012–2016	**Bachelors in Design, Indian Institute of Technology Guwahati** Minor in Mechanical Engineering

Awards and Honors

Papers

2024	**Best Paper Honorable Mention** for "Odds and Insights ...", ACM CHI
2023	**Best Paper Honorable Mention** for "multiverse ...", ACM CHI
2022	**Best Paper Honorable Mention** for "Evaluating the use of ...", IEEE VIS
2019	**Best Paper Award** for "Increasing the Transparency of ...", ACM CHI

Other Activities

2021-2024	**Special Recognitions for Outstanding Reviews** (three), ACM CHI

Publications

Peer-reviewed Full-length Conference and Journal Articles

| C8 | 2024 | **Milliways: Taming Multiverses through Principled Evaluation of Data Analysis Paths** DOI
Abhraneel Sarma, Kyle Hwang, Jessica Hullman and Matthew Kay |

Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI)

C7 2024 **Odds and Insights: Decision Quality in Exploratory Data Analysis Under Uncertainty** `DOI`
Abhraneel Sarma, Xiaoying Pu, Yuan Cui, Eli T Brown, Michael Correll and Matthew Kay
Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI)
Best Paper Honorable Mention

C6 2024 **Opportunities, tensions, and challenges in computational approaches to addressing online harassment** *
Evey Huang, *Abhraneel Sarma*, Sohyeon Hwang, Eshwar Chandrasekharan and Stevie Chancellor
Proceedings of the 2024 ACM Designing Interactive Systems Conference (DIS)

C5 2023 **multiverse: Multiplexing Alternative Data Analyses in R Notebooks** `DOI`
Abhraneel Sarma, Alex Kale, Michael Moon, Nathan Taback, Fanny Chevalier, Jessica Hullman and Matthew Kay
Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI)
Best Paper Honorable Mention

C4 2022 **Evaluating the Use of Uncertainty Visualisations for Imputations of Data Missing At Random in Scatterplots** `DOI`
Abhraneel Sarma, Shunan Guo, Jane Hoffswell, Ryan Rossi, Fan Du, Eunyee Koh and Matthew Kay
IEEE Transactions on Visualization and Computer Graphics (proc. VIS 2022)
Best Paper Honorable Mention

C3 2022 **An automated approach to reasoning about task-oriented insights in responsive visualization** `DOI`
Hyeok Kim, Ryan Rossi, *Abhraneel Sarma*, Dominick Moritz, Jessica Hullman
IEEE Transactions on Visualization and Computer Graphics (proc. VIS 2021)

C2 2020 **Prior Setting in Practice: Strategies and Rationales Used in Choosing Prior Distributions for Bayesian Analysis** `DOI`
Abhraneel Sarma and Matthew Kay
Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI)

C1 2019 **Increasing the Transparency of Research Papers with Explorable Multiverse Analyses** `DOI`
Pierre Dragicevic, Yvonne Jansen, *Abhraneel Sarma*, Matthew Kay, and Fanny Chevalier
Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI)
Best Paper Award

Preprints and Manuscripts

P1 2024 **The multiverse of universes: A tutorial to plan, execute, and interpret multiverses analyses using the R package multiverse** *(In Review)*
Martin Götz, *Abhraneel Sarma*, Ernest O'Boyle

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*Denotes conditional acceptance

Workshops and Lightly-Reviewed Articles

W1   2019   **Interactive Visualizations Tools for Prior Setting In Bayesian Analysis: Challenges For Evaluation**
Abhraneel Sarma and Matthew Kay
Workshop on Human-Centered Study of Data Science Work Practices at ACM CHI

Work Experience

2023   **Research Intern**
Microsoft Corp.
Mentors: Jake Hoffman, Dan Goldstein

2021   **Research Intern**
Adobe, Inc
Mentor: Shunan Guo

2019-   **Graduate Research Assistant**
MUCollective, Northwestern University

2016-2019   **Graduate Research Assistant** (full time, May 2018 onwards)
MUCollective, University of Michigan

2017   **User Experience Intern**
Office of Academic Innovation, University of Michigan

2015   **Undergraduate Research Intern**
Keio-NUS CUTE Center, National University of Signapore

Teaching

Conference Courses

2022, 2023   **Transparent Practices for Quantitative Empirical Research**
Co-instructors: Chat Wacharamanotham, Fumeng Yang, Xiaoying Pu, Lace Padilla, Maryam Hedayati (this is a lecture series with rolling instructors).
ACM CHI 2022 (online); 22 attendees
ACM CHI 2023 (hybrid); 6 attendees
IEEE VIS 2023 (in-person); 8 attendees

Teaching Assistantship

2020   **Teaching Assistant**, JOUR377 Data Analysis and Visualization
Northwestern University

2018   **Graduate Student Instructor**, SI330 Data Manipulation in Python
University of Michigan

2017 **Graduate Student Instructor**, SI588 Fundamentals of Human Behavior
University of Michigan

Mentoring

2021-23 **Kyle Hwang**, undergraduate student at Northwestern University for "Milliways ..."
2022 **Philip Clement**, undergraduate student at Northwestern University for "Milliways ..."

Service

as a reviewer
2024 The ACM Symposium on User Interface Software and Technology (UIST)
2024 Information Visualization
2023 IEEE Transactions on Visualization and Computer Graphics (TVCG)
2022 Workshop on TRust and EXpertise in Visualization (TREX VIS)
2021-23 IEEE Visualization and Visual Analytics Conference (VIS)
2021-24 The ACM Conference on Human Factors in Computing Systems (CHI)

as a student volunteer
2018 IEEE Visualization and Visual Analytics Conference (VIS), Berlin, Germany
2017 IEEE Visualization and Visual Analytics Conference (VIS), Phoenix, AZ, USA

Invited Talks

2019 **Statistics and Scientific reporting: Can we do better?**
Data Camp at the University of Michigan