

Abhraneel Sarma

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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), as well as visualise the results of such *specification* uncertainty. I have also conducted studies to understand how users interpret uncertainty information in missing data contexts, and how we can improve decision making during in exploratory data analysis in multiple comparison scenarios

Education

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| 2019 - present | PhD, Computer Science, Northwestern University
Advisor: Jessica Hullman, Matthew Kay |
| 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

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| 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

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

Peer-reviewed Full-length Conference and Journal Articles

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| 2023 |
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multiverse: Multiplexing Alternative Data Analyses in R Notebooks

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

- 2022 **Evaluating the Use of Uncertainty Visualisations for Imputations of Data Missing At Random in Scatterplots**

Abhraneel Sarma, Shunan Guo, Jane Hoffswell, Ryan Rossi, Fan Du, Eunye Koh and Matthew Kay

IEEE Transactions on Visualization and Computer Graphics (proc. VIS 2022)

Best Paper Honorable Mention

- 2022 **An automated approach to reasoning about task-oriented insights in responsive visualization**

Hyeok Kim, Ryan Rossi, **Abhraneel Sarma**, Dominick Moritz, Jessica Hullman

IEEE Transactions on Visualization and Computer Graphics (proc. VIS 2021)

- 2020 **Prior Setting in Practice: Strategies and Rationales Used in Choosing Prior Distributions for Bayesian Analysis**

Abhraneel Sarma and Matthew Kay

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

- 2019 **Increasing the Transparency of Research Papers with Explorable Multiverse Analyses**

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

- 2024 **Odds and Insights: Decision Quality in Visual Analytics Under Uncertainty** (*In Review*)

Abhraneel Sarma, Xiaoying Pu, Charles Cui, Eli Brown, Michael Correll and Matthew Kay

- 2024 **Milliways: Taming Multiverses through Principled Evaluation of Data Analysis Paths** (*In Review*)

Abhraneel Sarma, Kyle Hwang, Jessica Hullman and Matthew Kay

Workshops and Lightly-Reviewed Articles

- 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 - present **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 Singapore

Teaching

Conference Courses

- 2022, 2023 **Transparent Practices for Quantitative Empirical Research**
Co-instructors: Chat Wacharamanatham, 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 ...”

Service

as a reviewer (for conferences)

- 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 CHI 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