Bhavya **Chopra**

Research Fellow, PROSE Team, Microsoft

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Education

July 2022 **August 2018**	**Indraprastha Institute of Information Technology Delhi (IIIT-Delhi)** BTech *(with Honors)*, Computer Science and Design **CGPA:** 9.14/10.00	**New Delhi, India**
May 2018 **May 2017**	**Delhi Public School, R.K. Puram** CBSE AISSCE Class XII **Aggregate:** 95.6/100.0	**New Delhi, India**

Research Interests

My research interests lie at the intersection of Human-Computer Interaction (HCI), Software Engineering, design of Intelligent Systems, and Accessibility Design. I aspire to leverage qualitative and quantitative research methods to improve human-AI interactions for end-users and developers.

Work Experience

Present **July 2022**	**Research Fellow, PROSE Team at Microsoft** [🌐] *Advisor: Dr. Austin Z. Henley* > Conducting user research with data scientists & end users to design human-AI interactions > Designed improved user experience for Flash Fill, shipped with Data Wrangler > Developed dataset generation pipelines for Responsible AI evaluation of conversational systems in Excel	**Bengaluru, India**
July 2021 **May 2021**	**Software Development Intern, MathWorks** > Developed *MatSight*, a visual analysis tool for the UX Team; won **Best Hack** & **Most Voted Hack** prizes > Refactored functional tests for MATLAB (R2021b) Support Package for Raspberry Pi Hardware, increased test code coverage to 65%	**Bengaluru, India**
August 2019 **June 2019**	**Software Development Intern, IIIT-Delhi** > Designed, developed, & hosted TechTree for the academic department and faculty to maintain and share descriptions of over 350 courses with students. > Helps 3000+ students every semester in planning courses through visualization of course pre-requisites via interactive tables and directed acyclic graphs.	**New Delhi, India**

Publications

S=In Submission, C=Conference, D=Demo, T=Thesis

[S.1] **Conversational Challenges in AI-Powered Data Science: Obstacles, Needs, and Design Opportunities** [🔗]
Bhavya Chopra, Ananya Singha, Anna Fariha, Sumit Gulwani, Chris Parnin, Ashish Tiwari, Austin Z. Henley
[In Submission]

[C.3] **Detangler: Helping Data Scientists Explore, Understand, and Debug Data Wrangling Pipelines** [🔗]
Nischal Shrestha, Bhavya Chopra, Austin Z. Henley, Chris Parnin
IEEE Symposium on Visual Languages and Human-Centered Computing
🏆 *Best Paper Award*   [VL/HCC '23]

[C.2] **StoryBox: Independent Multi-modal Interactive Storytelling for Children with Visual Impairment** [🔗]
Bhavya Chopra, Richa Singh
Late-Breaking Work, ACM SIGCHI Conference on Human Factors in Computing Systems   [CHI '22]

[C.1] **Reality Tales: Facilitating User-Character Interaction with Immersive Storytelling** [🔗]
Bhavya Chopra*, Khushali Verma*, Sonali Singhal*, Utsav Singla* (* = Equal Contribution)
Student Research Competition, ACM SIGCHI Conference on Human Factors in Computing Systems
🏆 *Second Position at CHI Student Research Competition (Undergraduate Category)*   [CHI '21]

[D.1] **CoWrangler: Recommender System for Data Wrangling Scripts** [🔗]
Bhavya Chopra, Anna Fariha, Sumit Gulwani, Austin Z. Henley, Daniel Perelman, Mohammad Raza, Sherry Shi, Danny Simmons, Ashish Tiwari
Demo Track, ACM International Conference on Management of Data   [SIGMOD '23]

[T.1] **Study of Assertions: Understanding Assertion Use in Java Projects on GitHub** [🔗]
Bhavya Chopra, Rahul Purandare
Bachelor Thesis, IIIT-Delhi, 2022

Honours and Awards

Best Paper Award, VL/HCC 2023 [⊕] Awarded by IEEE Symposium on Visual Languages and Human-Centered Computing for the paper titled *"Detangler: Helping Data Scientists Explore, Understand, and Debug Data Wrangling Pipelines"*

Second Position, Student Research Competition at CHI 2021 [⊕] Awarded by ACM Student Research Competition in the undergraduate category for the paper titled *"Reality Tales: Facilitating User-Character Interaction with Immersive Storytelling"*

Dean's List Award for Excellence in Research (2020–21) and (2021–22) Awarded for 2 consecutive years by Dean of Innovation, Research & Development (DIRD), IIIT-Delhi for research on inclusive storytelling experiences for children

Dean's List Award for Excellence in Academics (2020–21) Awarded by Dean of Academic Affairs (DoAA), IIIT-Delhi

GHC Student Scholarship 2021 Awarded by AnitaB.org for attending the 2021 Virtual Grace Hopper Celebration

Gary Marsden Travel Grant Award, 2021 and 2022 Awarded by SIGCHI to present my research at CHI 2021 & CHI 2022

Ishwar Chandra Memorial Award, DPS R.K. Puram, 2017 [⊕] Awarded by Ms. Joanna Kempkers, the High Commissioner of New Zealand, for excellent academic performance

Selected Research Projects

Defining AI Experiences for Data Science Tools   January 2023 — Present

> Conducting mixed-methods research to identify conversational challenges in using LLMs for data—through interviews and task-based studies with 21 data scientists and end users, with analysis of survey responses and telemetry data.
> Thematically analyzed interactions and iteratively prototyped interface designs for AI features in Microsoft products (Excel and Data Wrangler).
> Conducting usability evaluation with 8 in-depth semi-structured interviews.

Obstacles in Legacy Code-base Migrations   August 2023 — Present

Conducted and analyzed task-based studies with 6 software engineers and semi-structured interviews with 6 managers to identify challenges faced and strategies used in the upgradation of legacy .NET code-bases to newer versions.

Designing Inclusive Storytelling Experiences for Children   August 2020 — September 2022

Designed voice-based and tangible storytelling experiences for sighted children and for children with blindness and visual impairment through semi-structured interviews, roleplays, wizard-of-oz sessions, usability evaluations, and blind-folded sessions with 20 sighted children. *[Published at CHI '21 SRC and CHI '22 LBW]*

Understanding the usage of Assertions in Java   January 2021 — June 2022

Understanding the role of assertions from programmers' perspectives by using program analysis techniques to study their usage in Java programs, with the aim to extend this study to develop a tool that automatically generates context-aware candidate assertions to aid software development.

Selected Software Projects

Quill: Runtime C++ Work-Stealing Library   February 2021

Developed a light-weight thread pool based work-stealing runtime for async-finish task-parallelism in C++ to support flat-finish scopes using the Pthread library. (Technologies Used: **C++, Pthread Library**)

Plants versus Zombies: Strategy Video Game   October 2019 – January 2020

Re-implemented Plants vs Zombies, following object oriented programming principles. The project is well received in the open source community, with widespread attention from enthusiasts in various online forums. (Technologies Used: **Java, JavaFX**) (GitHub, Video)

FlairifyMe: Reddit Flair Detector   July 2019 – August 2019

Developed a RESTful API and web-interface to predict the flair of a given Reddit post on r/India using logistic regression with an accuracy of 65.2%. (Technologies Used: **Python(nltk, scikit-learn, Flask), MongoDB, Heroku, JavaScript, HTML, CSS**) (GitHub)

LiveErr0r: Real-time feedback for elementary learners   January 2019 – February 2019

Designed and developed an interactive system to check the correctness of handwritten mathematical expressions in real time, providing instant haptic feedback to elementary learners. (Technologies Used: **Python, Android, Arduino**)

Academic Research and Teaching Positions

Founding Member & Undergraduate Researcher, Accessibility and Inclusive Design Lab [◉] August 2021 — Present
Research Group led by Prof. Richa Gupta at IIIT-Delhi

Undergraduate Researcher, Program Analysis Group (PAG) [◉] November 2020 — May 2022
Research Group led by Prof. Rahul Purandare at IIIT-Delhi

Teaching Assistant, Introduction to Human-Computer Interaction January 2022 — May 2022
Undergraduate TA for freshman year course Introduction to HCI (DES102) at IIIT-Delhi, taught by Prof. Rajiv Ratn Shah

Teaching Assistant, Program Analysis August 2021 — December 2021
Undergraduate TA for graduate level course Program Analysis (CSE503) at IIIT-Delhi, taught by Prof. Rahul Purandare

Academic Service

Reviewer	CHI 2023 Papers, CHI 2022 Late-Breaking Work
Volunteer	CSCW 2022, CHI PLAY 2022, CSCW 2021, IndiaHCI 2021

Leadership Positions

Delhi Chapter Head, Women in Machine Learning and Data Science (WiMLDS) [◉] March 2021 — Present
Organised the chapter's first 4-week Mentorship Program and Knowledge Series talks on data science, ML and AI

President, Women in Tech June 2020 — June 2022
Delivered talks on HCI research & web-development, organized hackathons for diversity, and deployed the club website

Skills

Programming Languages	Python, Java, C++, C#, JavaScript, F*, MATLAB
Tools and Technologies	Git, shell scripting, openai-python, Flask, PySpark, pandas, Hadoop, HTML, CSS, Heroku, Spoon, OpenGL, Habanero C, OpenMP, MPI, JavaFX, Figma, Miro, LaTeX
Relevant Coursework	**Computer Science:** Data Structures, Analysis & Design of Algorithms, Fundamantals of Database Management Systems, Operating Systems, Computer Networks, Machine Learning, Big Data Analytics*, Program Verification*, Decision Procedures*, Foundations of Parallel Programming*, Computer Graphics*
	Human-Computer Interaction: Human Computer Interaction, Engineering Design, Visual Design and Communication, Design Processes and Perspectives, Advanced Topics in Human Centered Computing*, Design of Interactive Systems*, Inclusive Design - Universal Design and Accessibility*, Research Methods in Social Science and Design, Information Ethics

(* — *Graduate Level Courses*)