Divyanshu Kumar Singh

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Research Summary

In my research, I examine on how historically disadvantaged communties (e.g., lower-caste, conflict affected) communities and individuals leverage contemporary technologies to *build*, *re-purpose*, and *navigate* socio-technical systems as means to *re-exist* in society. I specialize in ethnographic and computational methods and combine them with critical theoretical frameworks such as Decolonial and Anti-Caste.

Education

PhD **University of Colorado Boulder**, Information Science May 2027 (expected)
- **Advisor:** Bryan Semaan ↗

B.Tech **Indraprastha Institute of Information Technology Delhi**, Computer Science June 2021
- **Advisor:** Jainendra Shukla ↗ & Venkata Ratnadeep Suri ↗

Skills

Programming Languages: Python, Java, C++, Javascript, HTML, Bash.

Research Methods: Interviews, Focus-groups, Ethnographic field studies, Survey, Thematic analysis, Statistical analysis.

Libraries/ Frameworks: sci-kit learn, Pandas, regex, Matplotlib, Selenium, bs4, Git, PyTorch, Docker, MongoDB.

Publications

[C.x]=Conference, [J.x]=Journal, [W.x]=Workshop, [M.x]=Magazine

[M.1] **Divyanshu Kumar Singh** and Palashi Vaghela. 2024. Anti-Caste Lessons for Computing: Educate, Agitate, Organize. XRDS 30, 4 (Summer 2024), 41–45. https://doi.org/10.1145/3665600 ↗ [PDF] ↗

[J.1] **Singh, D.K**., Kumar, M., Fosch-Villaronga, E. et al. Ethical Considerations from Child-Robot Interactions in Under-Resourced Communities. Int J of Soc Robotics 15, 2055–2071 (2023). https://doi.org/10.1007/s12369-022-00882-1 ↗ [PDF] ↗

[C.1] Asra Sakeen Wani, **Divyanshu Kumar Singh**, and Pushpendra Singh. 2022. "Hartal (Strike) Happens Here Everyday": Understanding Impact of Disruption on Education in Kashmir. In Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems (CHI '22). Association for Computing Machinery, New York, NY, USA, Article 315, 1–17. https://doi.org/10.1145/3491102.3502126 ↗ [PDF] ↗

[C.2] **Divyanshu Kumar Singh**, Sumita Sharma, Jainendra Shukla, and Grace Eden. 2020. Toy, Tutor, Peer, or Pet? Preliminary Findings from Child-Robot Interactions in a Community School. In Companion of the 2020 ACM/IEEE International Conference on Human-Robot Interaction (HRI '20). Association for Computing Machinery, New York, NY, USA, 325–327. https://doi.org/10.1145/3371382.3378315 ↗ [PDF] ↗

[W.1] **Divyanshu Kumar Singh**, Venkata Ratnadeep Suri, Jainendra Shukla. 2020. Design for the Well-Being of LGBTQIA+ University Students. (Lightly Reviewed, Workshop Paper) in From Needs to Strengths: Operationalizing an Assets-Based Design of Technology at ACM CSCW 2020, Oct-2020. [PDF] ↗

Research Experience

Al-Adala Lab, *PhD Researcher* Boulder, CO
1. *Alternate News Infrastructure on Youtube by Dalit Journalists* Aug 2022 – Present

- Understanding life-histories and experiences of Dalit (lower-caste) Journalists with creating and maintaining news content on Youtube.
- Conducting on-site ethnography in India with news organization, and used virtual

interviews and personal story-telling short vlogs to collect data from distance (US).

- Methods: Ethnography Field Study, Semi-Structured Interviews, Observations, Thematic Grounded Theory

2. *Speculating Decolonial Linguistic Praxis within HCI*

- Led & designed a design fiction with a Decolonial lens to provoke more inclusive linguistics praxis in computing.
- Led the paper writing, and work under submission at CHI'25.
- Methods: Design Fiction

Human-Machine Interaction Lab, *Undergraduate Student Researcher* — New Delhi, Delhi
Jul 2019 – Jun 2021

1. Social Robots for Primary Education

- Led and designed a longitudinal ethnographic study, involving kindergartner students and teachers to understand use of social robots in classroom for language learning.
- Analyzed videos, interview, observation notes and surveys, and led paper writing for ACM HRI [C.2].
- Methods: Thematic Analysis, Ethnographic Observation, Semi-Structured Interview, Surveys.

2. Ethics of Child-Robot Interaction in Underresourced Community

- Led the re-analysis of ethnographic data (from above study) to highlight ethical issues that arise from deploying social robots in under-resourced communities.
- Engaged in inter-discplinary paper writing, with HRI, Philosophy and Law (Policy) lens. Published in International Journal of Social Robots [J.1]
- Methods: Interaction Analysis of videos/interviews.

3. Digital Technology Use Amongst LGBTQ+ University Students

- Led and designed an in-depth interview study to understand the life-histories and transition of LGBTQ+ university student, and the use of technology for well-being.
- Engaged with LGBTQ+ communities collectives across Indian universities, and recruited 30+ participants from various states.
- Analyzed 80+ hours of interviews data. [W.1]
- Method: Semi-structured Interview, Thematic Analysis.

Mélang Lab, *Student Researcher* — New Delhi, Delhi
Jan 2021 – Jul 2022

1. *Education Technology and Disruption in Kashmir*

- Assisted in study protocol design and analysis to understand the impact of disruption/conflict on education access and technology use in Kashmir.
- Conducted thematic analysis of interview and brainstormed design implications, along with paper writing. Published at ACM CHI'22 [C.1]
- Methods: Thematic and Observational Analysis.

Industry/Professional Experience

Scry Analytics, *Software Engineer* — Gurugram, HR
Jun 2021 – July 2022

- Designed mathematical and coordinate logics to extract information from raw OCR output using document parsing. Improved efficiency of the algorithms and product (Collatio ↗) by from 90% to 98%.
- Led and integrated new document scanning features using existing parser, and mentored new developers with improving the efficiency. The efficiency was improved from 70% to 93-95%.
- Regularly conducted model optimastional and evaluations test, on testing and de-

ployment servers using Dockers.
- Assisted data collection/management teams with scripts to collect data, and cleaning pipelines.
- Tools: Python, Docker, Bash, MongoDB, Selenium, Git, Pandas, sci-kit learn, bs4, regex, openCV.

IIIT Delhi, *Research Intern*   New Delhi, Delhi
                                                                  May 2020 – Jul 2020
- Studied Theory of Inventive Problem Solving (TRIZ) use cases to prepare an engineering course curriculum.
- Individually explored a Child-Robot Interaction case study to apply TRIZ.

Teaching Experience

Graduate Part-Time Instructor (GPTI) - INFO 1101: Computation and Society   Summer 2024, 203
- Designed and taught course to 20+ undergraduates exploring intersection of technology and society, covering History of Computing, to Machine Learning Algorithms, GenAI & Creativity, and Ethics.
- Graded weekly assignments, conducted office hours, guided students on project.

Teaching Assistant/Studio Instructor - INFO 1201: Computational Reasoning   Fall 2024, Spring 2024, Fall 2023
- Introductory coding course on p5.js for 150+ undergraduates with no-coding background.
- Designing and teaching two recitations a week to 40+ students, assisting with assignments and projects, grading, and organizing multiple office hours.

Teaching Assistant - INFO 1101: Computation in Society   Fall 2022, Spring 2023
- Introductory course for 240 students to understand societal implications of technology.
- Grading student assignments, and held office hours.

Teaching Assistant - DES 101: Introduction to Human-Computer Interaction   Winter 2021
- Conducting & preparing weekly recitation sessions, for 40+ first-year undegraduates learning Human-Computer Interaction.
- Mentored and graded group of 42 students and 10 projects.
- Assisted in preparing exams and quizzes for the course.

Awards/Recognition

Special Recognition for Outstanding Reviews   CSCW'24, GROUP'25, CHI'25

Dean's Letter of Appreciation for Outstanding Work in Undergraduate Thesis Research   IIIT Delhi

Leadership/Professional Service

Reviewer (Full Paper, Late-Breaking, & Workshop papers)   CHI, CSCW, Social Media & Society, Compass, HRI, ICSR

Information Science Graduate Student Association, President   2024-Present
- Organizing and leading regular meeting with graduate students, and association members to discuss and brainstorm ideas and issues to support student in their program, career, and graduate life.
- Graduate Student representative at Graduate Committee of the department.
- Assisting department in organizing yearly new-PhD student visit, and helping association members in organizing events, and deliberating and acquiring funding.

- Recognized by Center for Student Involvement of University of Colorado Boulder for leadership and organization management.

Information Science Graduate Student Association, Treasurer   2023-2024

- Responsible for managing budget for the association, and assisting members to acquire various funding from university bodies.
- Streamlined funding acquiring process, and assisted members in hoisting new initiatives and events.
- Defended budgets and funding proposals with university administration and student goverment.

Astronuts: Astronomy Club of IIIT Delhi, Coordinator (Head)   2018-19

- Conducted Sky-Observation and in-class session on Astronomy
- Organized field trip to Sariska Astroport, and managed budgets.

Invited Lecture/Talks/Panel

Panel - "Fall into Orbit: New Student Organization Symposium"	Center for Student Involvement [CU Boulder]
Guest Lecture - Ethical Consideration of Deploying Social Robots in Under-Resourced Community Settings	INFO 4601: Ethics and Technology (Summer'24)
Talk - Coding for 4 Years: My Undergrad Journey in Computer Science	INFO 1201: Computational Reasoning
Lecture - Scratch: Functions and Loops	INFO 1201: Computational Reasoning
Talk - "Hartal (Strike) Happens Here Everyday": Understanding Impact of Disruption on Education in Kashmir	India HCI 2022 (Track: Out of India)

Reference(s)

Prof. Bryan Semaan, Information Science, University of Colorado Boulder, USA	bsemaan@colorado.edu
Prof. Venkata Ratnadeep Suri, Social Science and Humanities, IIIT Delhi, India	ratan@iiitd.ac.in
Prof. Casey Fiesler, Information Science, University of Colorado Boulder, USA	casey.fiesler@colorado.edu
Prof. Jainendra Shukla, Computer Science & Engineering, IIIT Delhi, India	jainendra@iiitd.ac.in