Saurabh Khanna

CONTACT INFORMATION

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RESEARCH INTERESTS

Fairness of knowledge access (vis-à-vis algorithmic bias) and possible ways to balance knowledge relevance with knowledge diversity

Combining insights from network analysis and machine learning to understand aspects reshaping education in developing nations

EDUCATION

Stanford University, California, USA

Ph.D., Education Policy, 2023

- Advisors: Prof. Prashant Loyalka, Prof. Benjamin Domingue

Ph.D. Minor, Computer Science, 2022

Stanford University, California, USA

M.A., Economics, 2021

Tata Institute of Social Sciences, Mumbai, India

M.A., Elementary Education, 2017

Birla Institute of Technology and Science, Pilani, India

B.S., Computer Science, 2012

HONORS AND AWARDS

William R. and Sara Hart Kimball Stanford Graduate Fellowship (Award of $138,000 for 3 years), 2018-21

Design Challenge Research Award, Stanford University and StartX (Research Award of $9,000), 2021

Karr Fellowship, Center for Education Policy Analysis, Stanford (Research Award of $3,000), 2021

Digital Learning Design Challenge Grant, Stanford University and StartX (Research Award of $1,500), 2021

Data Challenge Lab Member (30 Stanford students selected), 2020

Stanford Impact Labs Research Fellow (Research Award of $3,500), 2020

Immigration Policy Lab Collaborative Research Fellow (Research Award of $4,500), 2019

Institute Silver Medal Award, Master of Arts in Elementary Education, Tata Institute of Social Sciences, 2017

National Talent Search Examination Scholar, Government of India [Top 0.2% of 500000], 2006-12

All India Rank 562, All India Engineering Entrance Examination [Top 0.05% of 1000000], 2008

All India Rank 14 and 34, National Science Olympiad, 2007-2008

Research Experience

Stanford Institute for Human-Centered Artificial Intelligence

Graduate Research Affiliate, Stanford Digital Economy Lab **2021 – present**
PI: Prof. Erik Brynjolfsson

- Quantifying latent knowledge in web and news search
- Assessing the opportunity cost of top internet web and news search results
- Developing *Sonder* – an open-source search platform that dynamically assesses biases in web search

Public Knowledge Project, Stanford University

Graduate Research Assistant **2020 – present**
PI: Prof. John Willinsky

- Analyzing global outreach of open-access publishing through OJS (Open Journal Systems) installations
- Improving OAI (Open Archives Initiative) data harvesting

Immigration Policy Lab, Stanford University

Graduate Research Fellow **2019 – present**
PI: Prof. David D. Laitin and Prof. Jens Hainmueller

- Designed low-cost Interactive Voice Response surveys assessing integration for immigrants
- Configured short message servers and data storage servers to disseminate survey invites and record survey responses respectively

Graduate School of Education, Stanford University

Graduate Research Assistant **2018 – present**
Research Consultant, Freeman Spogli Institute **2017 – 2018**
PI: Prof. Prashant Loyalka

- Led protocol design and coordination for the SuperTEST Project - A large-scale international study to understand and improve the quality of technical education received by youth in developing economies
- Cleaned and analyzed data for 70000 students, 5000 faculty, and 400 department heads from technical education institutes in China, Russia, India, and South Korea

The World Bank, New Delhi, India

Research Consultant **2018**
PI: Dr. Tara Beteille

- Coordinated data analysis, data cleaning, and data management for 118 government engineering institutes under the purview of Technical Education Quality Improvement Programme (TEQIP)
- Employed social network analyses to assess homophily and integration among students on account of affirmative action policies
- Automated Python emailing scripts and conducted psychometric analysis towards sharing scaled performance reports with institutes

Center for Education, Innovation and Action Research, Mumbai, India
A collaborative intiative between *Tata Institute of Social Sciences (TISS)* and *Massachusetts Institute of Technology (MIT)*

Research Assistant, Connected Learning Initiative (CLIx) **2015 – 2017**
PI: Prof. Padma Sarangapani (TISS) and Prof. Vijay Kumar (MIT)

- Designed mathematics curriculum to improve the professional and academic prospects of 165 thousand underserved high school students across 4 Indian states
- Led development of a game 'Police Quad' to develop geometric reasoning proficiency in learners

Teaching Experience

Stanford University, California, USA

- *Primary Instructor, EDUC 306Y*: Seminar on Education and Economic Development **2021**
- *Teaching Assistant, EDUC 200A*: Introduction to Data Analysis and Interpretation **2020**

Teach For India, New Delhi, India

Fellow/Multi-subject Elementary Teacher **2013 – 2015**

- Taught and worked to bridge the achievement gap of 34 students (Grades 4 and 5) in a low-fee private school in Seelampur, East Delhi
- *Co-Founder and Curriculum Lead, 'Khel Khel Mein'*, an initiative providing underprivileged children with guidance and opportunities to participate in an organized sport

Industry Experience

Juniper Networks, Bengaluru, India

Software Engineer **2012 – 2013**

- Reduced IPS network parsing time by 97% by implementing prediction algorithms
- Led development on provisioning part of the security code base

Peer-reviewed Publications

Loyalka, P., Liu, O. L., Li, G., Kardanova, E., Chirikov, I., Hu, S., Yu, N., Ma, L., Guo, F., Beteille, T., Tognatta, N., Gu, L., Ling, G., Federiakin, D., Wang, H., **Khanna, S.**, Bhuradia, A., Shi, Z., Li, Y. (2021). Skill Levels and Gains in College STEM Education in China, India, Russia, and the United States. *Nature Human Behavior* https://www.nature.com/articles/s41562-021-01062-3

Silverman, R., Johnson, E., Keane, K., **Khanna, S.** (2020). Beyond decoding: A meta-analysis of the effects of language comprehension interventions on K-5 students' language and literacy outcomes. *Reading Research Quarterly* https://doi.org/10.1002/rrq.346

Loyalka, P., Liu, O. L., Li, G., Chirikov, I., Kardanova, E., Gu, L., Ling, G., Yu, N., Guo, F., Ma, L., Hu, S., Johnson, A. S., Bhuradia, A., **Khanna, S.**, Froumin, I., Shi, J., Choudhury, P. K., Beteille, T., Marmolejo, F., Tognatta, N. (2019). Computer science skills across China, India, Russia, and the United States. *Proceedings of the National Academy of Sciences*, 201814646 https://www.pnas.org/content/116/14/6732

Khanna, S. (2017). Through the Sociological Lens: Learning Mathematics in a Mumbai Classroom. *For the Learning of Mathematics 37*(3), 24-26.

Srinivas, S., **Khanna, S.**, Rahaman, J., Kumar, V. (2016). Designing a Game-Based Learning Environment to Foster Geometric Thinking. *2016 IEEE Eighth International Conference on Technology for Education (T4E)* (pp. 72-79). IEEE https://ieeexplore.ieee.org/document/7814798

Working Papers

Khanna, S., Smith, S., Beteille, T., Tognatta, N., Loyalka, P. Policies to De-Segregate: Experimental Evidence from a Large-Scale, Nationally Representative, Longitudinal Study of Colleges in India.

Khanna, S., Hainmueller, J., Lawrence, D., Laitin, D. Gender Gap in Refugee Integration.

Fei, J., Hotard, M., Ingham, H., **Khanna, S.**, Lawrence, D., Tesfaye, B., Weinstein, J., Yasenov, V. and Hainmueller, J. (2020). Automated Chat Application Surveys Using WhatsApp. *SocArXiv* https://osf.io/preprints/socarxiv/j9a2y

Loyalka, P. Shi, Z., Li, G., Kardanova, E., Chirikov, I., Yu, N., Hu, S., Wang, H., Ma, L., Guo, F., Liu, O. L., Bhuradia, A., **Khanna, S.**, Li, Y. (Revised for re-submission). The Effect of Faculty Research on Student Learning in College. *Educational Researcher*

Loyalka, P., Sylvia, S., Li, G., Ahmed, I., Chirikov, I., Chirikova, E., **Khanna**, S., Liu, O. L., Kardanova, E., Bhuradia, A., Liu, D. (Under Review). The Effect of Sleep on Learning: A Longitudinal Study of Undergraduates in China, India, and Russia. *SLEEP*

Conference Proceedings

Khanna, S. (2020). Is the Internet Impartial? Diversity in Knowledge Recommendation in Online Networks. *2020 Sunbelt Virtual Conference*

Khanna, S., Loyalka, P. (2020). Friendship Networks in College. *Conference on Educational Data Science*

Khanna, S., Loyalka, P. (2020). Affirmative Action and Social Integration in College. *SREE Spring 2020 Conference, Practical Significance and Meaningful Effects: Learning and Communicating What Matters, Arlington*

Khanna, S., Gajinkar, A., Roy, A., Chatterji, A., Bapat, A., Bose, A. (2017). Rigor as Familiarity in Mathematics Assessments. *41st Annual Meeting of the International Group for the Psychology of Mathematics Education, Singapore*

Bapat, A., **Khanna, S.**, Srinivas, S., Thirumalai, B., Kumar, R., Rahaman, J., Chougale, S., Bose, A. (2017). Facilitating Geometry Learning through Blended Curriculum. *41st Annual Meeting of the International Group for the Psychology of Mathematics Education, Singapore*

Khanna, S. (2016). Cost-effective pedagogies for implementing efficient inclusive schooling. *6th International Conference on Science of Human Learning, Delhi*

Khanna, S. (2016). Designing evidence based games to assess mathematical thinking. *TSG 42 of the 13th International Congress on Mathematics Education, Hamburg*

Invited Talks

June 1, 2021. *Assessing Fairness in Internet Search.* Stanford Social Entrepreneurial Students' Association

December 24, 2020. *Open-source tools for analyzing educational survey data.* All India Council for Technical Education, Ministry of Human Resource Development (MHRD), Government of India

January 20, 2017. *Reservation under the Right to Education Act.* Quality Education Support Trust (QUEST)

December 30, 2015. *Identity and the Textbook.* Center for Education, Innovation and Action Research Seminar Series

Relevant Internships

National Center for Antarctic and Ocean Research (Ministry of Earth Sciences), Goa, India
Research Analyst, Polar Remote Sensing Lab **2010**

SAP SuccessFactors, Bengaluru, India
Software Developer, Data Analytics **2011**

TECHNICAL SKILLS
- Statistical Packages: R (Tidyverse), Stata, Python (Scikit-learn, StatsModels), SPSS
- Languages: R, Python, SQL, MATLAB/Octave, Java, C, JavaScript, C#.NET, Unix shell
- Applications: Visual Studio, Microsoft SQL Server, Spyder, Jupyter, Gephi, LaTeX, Adobe Photoshop

LANGUAGES Fluent: English, Hindi (Native), Punjabi