O.P. JINDAL GLOBAL UNIVERSITY
Institution of Eminence Deemed to be University

JINDAL SCHOOL OF ART & ARCHITECTURE
India's First Interdisciplinary School of Built Environment

DATA CHALLENGES IN UNDERSTANDING *THE URBAN*

15 December 2020 – 9:15 AM to 2:00 PM

The Eighth International Conference on Big Data Analytics (BDA 2020 – http://www.bda2020.org/)
15 - 18 December 2020
Hosted by Ashoka University, Sonipat (Delhi, NCR), India

THE WORKSHOP AND THE CONFERENCE WILL BE HELD FULLY ONLINE USING ZOOM

Registration is FREE. Please fill out the form at https://forms.gle/cSsGgzStr9mup2L26 to receive Zoom login credentials)

09:15 – 09:30 Welcome and Introduction to Workshop, Prof. Girish Agrawal, *Jindal School of Art & Architecture*

09:30 – 10:30 **Big Data for Urban Resilience**

Dr. Bandana Kar, *Oak Ridge National Laboratory*

Advancements in geo-spatial and sensor technologies and the proliferation of personal and interconnected devices have empowered scientists and citizens to generate large volume of disparate, dynamic and geographically distributed data at varying intervals and velocity. As seen during COVID-19, technological innovations and convergence have also influenced the pattern of our daily activities, social interactions and subsequently urban landscape. Despite all the advancements, urban areas are still subject to extreme events, environmental damage, and deprivation of essential resources such as access to healthcare. However, the availability of big data in real-time, advancements in edge and cloud computing, data science and analytics, and artificial intelligence have enabled the development of knowledge discovery platforms and situational awareness tools to help stakeholders and policy makers with decision-making during extreme event such as the current pandemic. This presentation will provide an overview of research activities at the Oak Ridge National Laboratory in human dynamics, built environment, and infrastructure resilience, among others. The presentation will also discuss the issues and challenges of ensuring resilience of an urban area while leveraging big data and smart city initiatives.

10:30 – 11:30 **Open Data Resources for Energy, Emissions, & Air Pollution Analysis in India**

Dr. Sarath Guttikunda, *Urban Emissions*

Almost all the debates on air quality in India are (often) limited to big cities (like Delhi, Mumbai, and Kolkata), even though most of India's population lives in Tier-2, Tier-3, and smaller towns. There is little by way of measurements or an assessment of sources contributing to local air pollution problems or the growing health impacts associated with these pollution levels. The Air Pollution knowledge Assessment (APnA) city program, launched in 2017, is an attempt to fill this lacuna of information, with an objective to create a baseline database for air pollution in Indian cities and to inform policymakers as they chart out strategies to improve air quality. This presentation will cover an overview of the methodologies in assessing emissions and pollution, discussion points associated with the available data and big-data, and how we are linking these databases for public and policy dialogue in India.

11:30 – 12:30 **Smart Cities, Big Data and Confusion**

Prof. Dinesh Mohan, *Indian Institute of Technology, Delhi*

More than 15 years after the National Urban Transport Policy was announced by the central government, the problems identified in it remain the same, or have worsened. Land use planning has not enabled the lower-income groups to live closer to work, road use is more dominated by private vehicles, there is little money to improve facilities for pedestrians and bicyclists, and, pollution has not gone away. Now we have solutions like big data and 'smart cities' looking for problems to be solved. Just because large amounts of data are available does not mean that governance, medical, education, transport, climate change and political problems can be solved by complex number crunching algorithms. The growing availability of big data presents new 'opportunities' to camouflage information as wisdom. We will also have to deal with important issues of path dependence and complex interactions of society and technology in a very unequal and unfair society. This is in addition to developing an understanding of the legal, ethical, and cultural issues associated with collection, storage, and studying these data. In such a situation it is very important to first set out in very clear terms which sections of society will get what benefits, how those benefits are going to be measured and in what time frames. Once we set out our problems and objectives clearly, it is only then that we can go about collecting and analysing data.

12:30 – 13:30 **What Does the Pandemic Tell Us About Data?**

Dr. Anant Maringanti, *Hyderabad Urban Lab*

Over the last 8 months, researchers and practitioners alike have been asking one single question consistently. What data do we have to make sense of the pandemic? Even as frustrations about absence of adequate data multiplied, we tried to make do with what is available – cleaning, analysing, visualising and drawing important policy and implementation lessons. This talk asks the counter intuitive question: what has the pandemic taught us about data? In attempting to answer this question, I navigate multiple worlds of spatial and non-spatial data, quantitative and non-quantitative data. I try to first make the case for a more expansive understanding about what is considered *data*, and then to argue for incorporating a parallel track in all our research activities to archive, trace and document the lives and afterlives of data generated in research processes.

13:30 – 14:00 Discussion and closing remarks, Prof. Prasad Pathak, *FLAME University*

Keynote Speaker Biographical Sketches

Dr. Bandana Kar

R & D Staff and Acting Group Lead, Built Environment Characterization Group, Oak Ridge National Laboratory, Oak Ridge, Tennessee

Dr. Bandana Kar is an R&D Staff member in the National Security Sciences Directorate at Oak Ridge National Laboratory. She was an Associate Professor in the Department of Geography and Geology at the University of Southern Mississippi. Dr. Kar brings an inter-disciplinary perspective to resilience science that integrates fundamentals of GIScience, planning and computational science. Her research leverages static and dynamic large-scale datasets and computational methods to develop data and impact-driven solutions for energy urban resilience. She was the recipient of the 2019 Emerging Scholar Award from the American Association of Geographers' (AAG) Regional Development and Planning Specialty Group, and was a fellow of the 2009 National Science Foundation's (NSF) Enabling the Next Generation of Hazards and Disasters Researchers Fellowship Program. She is a co-editor of the book Risk Communication and Community Resilience. She has been funded by the NSF, Department of Homeland Security, Department of Energy, and NASA. Dr. Kar received her PhD from the Department of Geography, University of South Carolina, in August 2003. She has a MA in Geography from the State University of New York, Albany, a Master of City Planning from the Indian Institute of Technology, Kharagpur, and a Bachelor of Architecture from the College of Engineering and Technology, O.U.A.T, Bhubaneswar, India.

Dr. Sarath Guttikunda

Founder & Director, Urban Emissions (India)

Dr. Sarath Guttikunda is a chemical engineer, atmospheric scientist, TED fellow, and founder of Urban Emissions (India). His main research interest is air quality analysis and finding ways to bridge the gap between science and policy. He is the developer of the SIM-air family of tools used for air pollution knowledge assessments (APnA) city program showcasing emissions, pollution, and source contribution information for 50 airsheds in India. In 2016, Dr. Guttikunda was part of the team that launched the only air quality forecast platform for all of India. He was a member of India's AQI formulation committee (2014) and WHO's air quality guidelines development group (2016-2020). He has a PhD in Chemical Engineering and Environmental Policy from the University of Iowa and a BTech (Hons) from IIT Kharagpur.

Prof. Dinesh Mohan

Honorary Professor, IIT Delhi

Professor Dinesh Mohan is Honorary Professor at the Indian Institute of Technology Delhi. He was Distinguished Professor at Shiv Nadar University (2016-2018) and formerly Volvo Chair Professor for Biomechanics and Transportation Safety at the Transportation Research and Injury Prevention Programme of the Indian Institute of Technology Delhi, where he was a member of the faculty from 1979 to 2014. Professor Mohan obtained his BTech in Mechanical Engineering from the Indian Institute of Technology Bombay, followed by a Masters degree in Mechanical and Aerospace Engineering from the University of Delaware, and then a PhD in Biomechanics from the University of Michigan, Ann Arbor. He is recipient of the Distinguished Alumnus Award of Indian Institute of Technology Bombay, Distinguished Career Award University of Delaware (USA), the American Public Health Association International Distinguished Career Award, the Bertil Aldman Award of the International Council on Biomechanics of Injuries, the Association for Advancement of Automotive Medicine's Award of Merit and the International Association for Accident & Traffic Medicine's International Award and Medal for outstanding achievement in traffic safety.

Dr. Anant Maringanti

Executive Director, Hyderabad Urban Lab

Dr. Anant Maringanti is executive director of Hyderabad Urban Lab, a multi disciplinary research programme. A geographer with a PhD from the University of Minnesota, he has taught graduate and undergraduate courses at the National University of Singapore, University of Hyderabad and the National Academy of Legal Studies and Research, Hyderabad. His research and teaching interests centre on questions of urban innovations, big data, and globalization from the South Asian vantage point. He is widely published in international academic journals on these subjects. As an evolving experiment in urban research, design and pedagogy, Hyderabad Urban Lab collaborates with media professionals, planners, technologists, academic researchers and legal professionals to develop innovative solutions. Institutionally, its mandate is to create safe spaces to explore and develop responses to the challenges of contemporary cities namely mobility, housing and waste

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Workshop Organizers

Prof. Girish Agrawal, *O.P. Jindal Global University, Sonipat, India*
Ms. Bakul Budhiraja, *O.P. Jindal Global University, Sonipat, India*
Prof. Prasad Pathak, *FLAME University, Pune, India*
Prof. Raja Sengupta, *McGill University, Montreal, Canada*
Prof. Geetam Tiwari, TRIPP, *Indian Institute of Technology, Delhi, India*