Smart City - Are We There Yet?

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Abstract:
While the first cities in the world were established in Mesopotamia, and in the Indus and Nile valleys sometime around 3500 BCE, the first smart cities are in operation since 1994. In the last few decades, there has been a continuous rapid migration of population from the rural to urban areas due to various reasons including to improve livability and workability. According to estimates, 70% of the world population will live in urban areas by the year 2050. This has caused multifold sustainable challenges in terms of air quality, water availability, energy requirements, effective healthcare, security requirements, safety requirements, and environmental pollution. Rapid urban population growth in the existing cities causes constraints in both man-made and natural resources. The smart cities have been envisioned to mitigate these problems of rapid migration of human population. The smart cities may use one or multiple smart components including smart healthcare, smart infrastructure, smart grids, smart transportation, smart buildings, and smart communications, based on factors, such as design and operation cost. The objective of the smart cities is better utilization of limited available natural and man-made resources to improve quality of life of citizens. While there is a need for smart cities, latest information and communication technology (ICT) including Internet-of-Things (IoT), wireless technology, sensor technology, have been relentless drivers of the smart cities. The objective of this talk is to analyze if we are there yet in terms of design and operation of smart cities. In this talk, the various components of the smart cities and the underneath technologies will be elaborated. The audience will find answers to several questions on smart cities including the following: (1) what are smart cities? (2) What are the technologies that make smart cities possible? (3) What are the characteristics of smart cities? (4) How to design and implement smart cities? (5) What are the challenges of smart cities? (6) What are the research directions for the design and operation of efficient smart cities? (7) What are the various industry, academia, and Government initiatives around the globe on smart cities?

Speaker Biography:

Dr. Saraju P. Mohanty is a Professor at the University of North Texas. Prof. Mohanty's research is in "Smart Electronic Systems" which has been funded by National Science Foundations, Semiconductor Research Corporation, US Air Force, and Indo-US Technology Forum. He received IEEE-CS-TCVLSI Distinguished Leadership Award in 2018 for outstanding services to the IEEE, and to the VLSI research community. He has been recognized as a IEEE Distinguished Lecturer by the Consumer Electronics Society (CESoc) in 2017. He was conferred the Glorious India Award in 2017 for his exemplary contributions to the discipline. He received Society for Technical Communication (STC) 2017 Award of Merit for his outstanding contributions to IEEE Consumer Electronics Magazine. He was the recipient of 2016 PROSE Award for best Textbook in Physical Sciences & Mathematics from the Association of American Publishers for his Mixed-Signal System Design book published by McGraw-Hill in 2015. He was conferred 2016-17 UNT Toulouse Scholars Award for sustained excellent scholarship and teaching achievements. He is the EiC of the IEEE Consumer Electronics Magazine (CEM). He serves as the Chair of Technical Committee on VLSI, IEEE Computer Society. He has received 4 best paper awards and has delivered multiple keynote talks at various International Conferences. He authored 280 research articles, 3 books, and invented 4 US patents. His Google Scholar h-index is 29 and i10-index is 89. More about his biography, research, education, and outreach activities can be obtained from his website: http://www.smohanty.org.