



Vinod Vokkarane



Biography: Vinod M. Vokkarane is a Professor in the Department of Electrical and Computer Engineering at the University of Massachusetts Lowell. Prior to this, he was an Associate Professor of Computer and Information Science at the University of Massachusetts Dartmouth from 2004 to 2013. He was also a Visiting Scientist at the Claude E. Shannon Communication and Network Group, Research Laboratory of Electronics (RLE) at Massachusetts Institute of Technology (MIT) from 2011 to 2014. He received the B.E. degree with Honors in Computer Science and Engineering from the University of Mysore, India in 1999, the M.S. and the Ph.D. degree in Computer Science from the University of Texas at Dallas in 2001 and 2004, respectively. His primary areas of research include design and analysis of architectures and protocols for ultra-high speed networks, grid and cloud networks, and green networking. He has published more than 140 peer-reviewed journal and conference papers. He is the recipient of the UMass Dartmouth Scholar of the Year Award 2011, the UMass Dartmouth Chancellor's Innovation in Teaching Award 2010-11, the University of Texas at Dallas Computer Science Dissertation of the Year Award 2003-04, and the Texas Telecommunication Engineering Consortium Fellowship 2002-03. Dr. Vokkarane is the co-author of a book, "Optical Burst Switched Networks," Springer, 2005. He is currently on the Editorial Board of IEEE/OSA Journal of Optical Communications and Networking (JOCN) and Springer Photonic Network Communications Journal and has also served as an Editor of IEEE Communications Letters and Elsevier Journal of Optical Switching and Networking. He has co-authored several Best Paper Awards, including the IEEE GLOBECOM 2005, IEEE ANTS 2010, and ONDM 2015. He has served as the Technical Program Committee Chair for the Optical Networks and Systems (ONS) symposia at ICCCN 2007 and 2010, GLOBECOM 2011, ICC 2012, INFOCOM High-Speed Networks (HSN) workshop 2011, IEEE ANTS 2013, and IEEE 2014. He has served as the General Vice-Chair for

IEEE ANTS 2015 and is currently the General Co-chair for IEEE ANTS 2016. He is a Senior Member of IEEE.

Session Title: Electricity Cost and Emissions Reduction in Optical Networks

Abstract: Economic and environmental restrictions are two main criteria for any energy consumer. Neither can be improved substantially without impacting the other. Information and communication technology (ICT) is a big energy consumer that uses various technologies and policies to meet the economic and environmental restrictions, such as energy-cost aware and energy-emission aware routing. Energy aware routing is capable of minimizing the electricity cost and emissions in the network core and at the network edge by shifting consumption from one energy source to another. However, although some types of energy sources (particularly coal power plants) are cheap sources of electricity, they are also the world's top contributing sources of carbon dioxide emissions, and the primary cause of global warming. Thus, reduction of electricity cost and reduction of carbon dioxide emissions may be distinct goals in opposition to one another. We consider the reduction of electricity cost and emissions of power markets in a combined manner to address both economic and environmental concerns of ICT.