

Title:  
Complex Networks

Abstract:

The Internet, social networks, power grids, gene regulatory networks, neuronal systems, food webs, social systems, and networks emanating from augmented and virtual reality platforms are all examples of complex networks. Collection and analysis of data from these networks is essential for their understanding. Traffic traces collected from various deployed communication networks and the Internet have been used to characterize and model network traffic, analyze network topologies, and classify network anomalies. Data mining and statistical analysis of network data have been employed to determine traffic loads, analyze patterns of users' behavior, and predict future network traffic while spectral graph theory has been applied to analyze network topologies and capture historical trends in their development. Recent machine learning techniques have proved valuable for predicting anomalous traffic behavior and for classifying anomalies in complex networks. Further applications of these tools will help improve our understanding of the underlying mechanisms that govern behavior, improve their performance, and enhance their security of social networks such as Facebook, LinkedIn, Twitter, Internet blogs, forums, and websites.

Bio:

Ljiljana Trajkovic received the Dipl. Ing. degree from University of Pristina, Yugoslavia, in 1974, the M.Sc. degrees in electrical engineering and computer engineering from Syracuse University, Syracuse, NY, in 1979 and 1981, respectively, and the Ph.D. degree in electrical engineering from University of California at Los Angeles, in 1986.

She is currently a Professor in the School of Engineering Science at Simon Fraser University, Burnaby, British Columbia, Canada. From 1995 to 1997, she was a National Science Foundation (NSF) Visiting Professor in the Electrical Engineering and Computer Sciences Department, University of California, Berkeley. She was a Research Scientist at Bell Communications Research, Morristown, NJ, from 1990 to 1997, and a Member of the Technical Staff at AT&T Bell Laboratories, Murray Hill, NJ, from 1988 to 1990. Her research interests include high-performance communication networks, control of communication systems, computer-aided circuit analysis and design, and theory of nonlinear circuits and dynamical systems.

Dr. Trajkovic serves as IEEE Division X Delegate/Director (2019–2020) and served as IEEE Division X Delegate-Elect/Director-Elect (2018). She is also serves as Senior Past President (2018–2019) of the IEEE Systems, Man, and Cybernetics Society and served as Junior Past President (2016–2017), President (2014–2015), President-Elect (2013), Vice President Publications (2012–2013, 2010–2011), Vice President Long-Range Planning and Finance (2008–2009), and a Member at Large of its Board of Governors (2004–2006). She served as 2007 President of the IEEE Circuits and Systems Society. She was a member of the Board of Governors of the IEEE Circuits and Systems Society (2001–2003, 2004–2005). She is Chair of the IEEE Circuits and Systems Society joint Chapter of the Vancouver/Victoria Sections. She was Chair of the IEEE Technical

Committee on Nonlinear Circuits and Systems (1998). She is General Co-Chair of SMC 2020 and SMC 2018 Workshop on BMI Systems and served as General Co-Chair of SMC 2016 and HPSR 2014, Special Sessions Co-Chair of SMC 2017, Technical Program Chair of SMC 2017 and SMC 2016 Workshops on BMI Systems, Technical Program Co-Chair of ISCAS 2005, and Technical Program Chair and Vice General Co-Chair of ISCAS 2004. She served as an Associate Editor of the IEEE Transactions on Circuits and Systems (Part I) (2004–2005, 1993–1995), the IEEE Transactions on Circuits and Systems (Part II) (2018–, 1999–2001, 2002–2003), and the IEEE Circuits and Systems Magazine (2001–2003). She was a Distinguished Lecturer of the IEEE Circuits and Systems Society (2010–2011, 2002–2003). She is a Professional Member of IEEE-HKN and a Fellow of the IEEE.