Dallas Chapter of IEEE Signal Processing Society Presents

Structural Control of Floating Wind Turbines

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The Department of Energy (DOE) strategy for offshore wind calls for the nation to deploy 54 gigawatts (GW) of offshore wind generating capacity by 2030, at a levelized cost of energy of $0.07 per kilowatt-hour (kWh) [DOE, 2011]. This target will be achieved through innovation in many areas, but necessarily by making wind turbines smarter with a new generation of control systems. This presentation will review recent work on structural control systems to improve the reliability of large-scale offshore floating wind turbines.

Mario A. Rotea is a professor and head of the Mechanical Engineering Department at the University of Texas at Dallas, where he is also an affiliate professor of electrical engineering. He began his academic career at Purdue University, West Lafayette, where he was a professor of aeronautics and astronautics for seventeen years. He was a professor and head of the Mechanical and Industrial Engineering Department from 2007 to 2009 at the University of Massachusetts, Amherst. He managed the Control Systems program at the NSF from 2005 to 2007 and worked for the United Technologies Research Center in 1997–1998. Dr. Rotea has made has pioneering contributions in optimal and robust monitoring and control systems. He has developed and transitioned to industry control systems to mitigate noise and vibrations in gas turbine engines, helicopters, and machine tools. His contributions have been documented in more than one hundred archival and conference publications, and reports to industry and government agencies; his work has been cited over a thousand times in the scholarly literature. He is a recipient of the NSF 1993 Young Investigator Award and a Fellow of the IEEE. His current research interests are in monitoring and control of wind energy systems.

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