

Department of Electrical and Computer Engineering



TEXAS TECH UNIVERSITY

Edward E. Whitacre Jr.
College of Engineering™

Fall 2011 Seminar Series

Seminar Title: A metric between probability distributions of different sizes

Time: October 14, 2011, 3:00 - 4:00 PM

Location: Lankford Lab ECE 101

Speaker:

Prof. M. Vidyasagar

Cecil & Ida Green Chair in Systems Biology Science,
Head Bioengineering Department,
Erik Jonsson School of Engineering & Computer Science,
The University of Texas at Dallas



Abstract:

There are many ways to compare two probability distributions defined on a common set, for instance the total variation metric. However, in problems of reduced-order modeling, one has to compare probability distributions on sets of different cardinality. In this talk a "Variation of Information" metric is defined for such a purpose, and the problem of optimal order reduction in this metric is also studied. It is shown that the problems of computing the metric as well as order reduction are both closely related to a problem in computer science known as bin-packing with over-stuffing.

Speaker Bio:

Prof. Mathukumalli Vidyasagar received his B.S., M.S. and Ph.D. degrees in electrical engineering from the University of Wisconsin in Madison, in 1965, 1967 and 1969 respectively. Between 1969 and 1989, he was a Professor of Electrical Engineering at various universities in the USA and Canada. In 1989 he returned to India as the Director of Centre for Artificial Intelligence and Robotics (CAIR) in Bangalore. In 2000, he moved to the Indian private sector as an Executive Vice President of India's largest software company, Tata Consultancy Services. In 2009, he joined the Erik Jonsson School of Engineering & Computer Science at the University of Texas at Dallas, as a Cecil & Ida Green Chair in Systems Biology Science. In March 2010, he was named as the Founding Head of the newly created Bioengineering Department. He is the recipient of numerous awards including *Hendrik W. Bode Lecture Prize* and *IEEE Control Systems Award*. He is a *fellow of the IEEE, Indian National Academy of Sciences and Indian National Academy of Engineering*. He was named as one of "Forty Tech Gurus" in the November 2004 issue of *IEEE Spectrum*.

His current research interests are in the application of stochastic processes and stochastic modeling to problems in computational biology, control systems and quantitative finance.



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