

Dallas Chapter of IEEE Signal Processing Society Presents

**Digital Video Image Quality and
Perceptual Coding**

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**11am, Monday, June 21, 2010
Rady Room, 6th Floor, Nedderman Hall
University of Texas at Arlington**

Based on a human visual system (HVS) based approach, digital video image quality and perceptual coding (DVIQPC) outlines the principles, metrics and standards associated with perceptual coding as well as the latest techniques and applications. It discusses the latest developments in vision research as they relate to HVS based video and image coding. It discusses subjective and objective assessment methods, quantitative quality metrics including vision model based digital video impairment metrics, test criteria and procedures. It examines post-filtering and reconstruction issues associated with color bleeding, blocking, ringing and temporal fluctuation artifacts in detail along with methods to reduce/eliminate them. It also focuses on picture quality assessment criteria. It poses new challenges to vision research and/or how to transfer vision science to imaging and visual communication systems engineering. It also poses an obvious theoretical and practical challenge regarding the concept of psychovisual redundancy (also how to define this quantitatively) and to establish theoretical bound for perceptually lossless coding.

K.R. Rao is a professor of electrical engineering and a member of the Academy of Distinguished Scholars at the University of Texas at Arlington. He, along with two other researchers, introduced the Discrete Cosine Transform (DCT) in 1975 which has since become very popular in digital signal processing. DCT, INTDCT and MDCT have been adopted in several international video/image/audio coding standards such as JPEG/MPEG/H.26X series. He has authored, co-authored, or edited many books some of which include "Orthogonal Transforms for Digital Signal Processing", "Fast Transforms: Analyses and Applications", "Discrete Cosine Transform-Algorithms, Advantages, Applications", "Techniques and standards for Image/Video/Audio Coding", "Packet video communications over ATM networks", "Multimedia communication systems". He has conducted workshops/tutorials on video/audio coding/standards worldwide. He has published extensively in refereed journals and has been a consultant to industry, research institutes, law firms and academia. He is a Fellow of IEEE.

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