

Title: A Data-Driven Approach to Perceptual Video Coding**报告人: C.-C. Jay Kuo 教授****(University of Southern California)****主持人: 张云 副研究员****日期: 2017年7月14日****时间: 15:30-16:30****地点: F楼1119会议室****BIOGRAPHY**

Dr. C.-C. Jay Kuo received his Ph.D. degree from the Massachusetts Institute of Technology in 1987. He is now with the University of Southern California (USC) as Director of the Media Communications Laboratory and Dean's Professor in Electrical Engineering-Systems. His research interests are in the areas of digital media processing, compression, communication and networking technologies. Dr. Kuo has guided 140 students to their Ph.D. degrees and supervised 25 postdoctoral research fellows. He is a co-author of about 250 journal papers, 900 conference papers and 14 books. Dr. Kuo is a Fellow of AAAS, IEEE and SPIE. Dr. Kuo received the 1992 NSF Young Investigator (NYI) Award, the 1993 NSF Presidential Faculty Fellow (PFF) Award, the 1994 USC Northrop Junior Faculty Research Award, the 2007 Okawa Foundation Research Award, the 2010 Electronic Imaging Scientist of the Year Award, the 2010-11 Fulbright-Nokia Distinguished Chair in Information and Communications Technologies, the 2011 Pan Wen-Yuan Outstanding Research Award, the 2014 USC Northrop Grumman Excellence in Teaching Award, the 2016 USC Associates Award for Excellence in Teaching, the 2016 IEEE Computer Society Taylor L. Booth Education Award, the 2016 IEEE Circuits and Systems Society John Choma Education Award, the 2016 IS&T Raymond C. Bowman Award and the 2017 IEEE Leon K. Kirchmayer Graduate Teaching Award.

Enquiries: Miss Wang, Tel:86392309, E-mail: jinhui.wang@siat.ac.cn**ABSTRACT**

There has been a significant progress in image/video coding in the last 50 years, and many visual coding standards have been established, including JPEG, MPEG-1, MPEG-2, H.264/AVC and H.265, in the last three decades. The visual coding research field has reached a mature stage, and the question "is there anything left for image/video coding?" arises in recent years. One emerging R&D topic is "perceptual coding". That is, we may leverage the characteristics of the human visual system (HVS) to achieve a higher coding gain. For example, we may change the traditional quality/distortion measure (i.e., PSNR/MSE) to a new perceptual quality/distortion measure and take visual saliency and spatial-temporal masking effects into account. One famous example is the SSIM (Structural Similarity) index. However, "is it sufficient to keep visual coding research vibrant and prosperous for another decade with such a modification?" The answer is probably no. In this talk, I will present a new data-driven approach to perceptual image/video coding that is dramatically differently from the past. This approach is centered on two key concepts – the stair quality function (SQF) and the Just-Noticeable-Differences (JND) – which take the HVS into account implicitly. This new approach is expected to lead to numerous new R&D opportunities and revolutionize coding research with modern machine learning tools.

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