Video technologies have experienced an important advancement in the last few years and have achieved a great success in different applications. Examples include DVD storage-based systems, digital television systems, video streaming and many others. All current video coding systems are based on the very well-known motion compensation prediction paradigm where most of the computational burden of the coding/decoding process is put at the encoder, leading to a complexity balance where complex encoders interact with simpler decoders.

The Slepian-Wolf and Wyner-Ziv Theorems have received a lot of interest recently by showing that it is feasible to shift part of this computational burden to the decoder, allowing the existence of simpler encoders. Distributed Video Coding (DVC) aims at exploiting these theorems to build encoders that are more suitable for applications where low complexity encoders are a must because memory, computation, and energy are scarce.

This talk will present the state-of-the-art in video coding and will introduce the current efforts and applications aimed at proving that DVC may be a new coding paradigm representing a breakthrough in video coding.

Dr. Luis Torres is a Professor at the Technical University of Catalonia, where he teaches Telecommunication Systems and Advanced Video Coding courses. His main interests are image and video coding, image and video analysis, and face recognition. He has been involved in more than 45 national and international funded projects in very low bit-rate video coding applications, face recognition and MPEG-4 and MPEG-7 standardization activities. He has published more than 120 papers in journals and conferences and has edited along with Murat Kunt the book entitled “Video Coding: The Second Generation Approach.” He served as a coding expert for the European Commission, evaluating technical proposals and designing European research programs. He was a Visiting Professor at Purdue University in 2002. Prof. Torres has been Vice-Chair of the Image and Multidimensional Signal Processing Technical Committee (2004-2007) and was General Chair of the IEEE International Conference on Image Processing (ICIP 2003). He is an IEEE Signal processing Society Distinguished Lecturer in 2006 and is currently Vice President for international policy at the Technical University of Catalonia.

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