

Andrea Cavallaro

Audio-visual learning and processing for body cameras

Abstract:

Body cameras capture user-centred data that can be used to analyse a dynamic scene, to recognise interactions and to classify physical activities. A body camera is equipped with multiple sensors such as microphones and inertial measurement units, in addition to the imager. However, despite this richness in sensing modalities, the analysis of data from a wearable camera is particularly challenging due to unconventional mounting and capturing conditions, rapid changes in camera pose, self-occlusions, background noise and motion blur. In this talk I will present the main challenges for learning, classification and processing with body-camera signals and show how multi-modality can help address these challenges. In particular I will discuss action recognition and audio-visual person re-identification as specific application examples. I will also cover considerations about privacy and how to use machine learning to design privacy-preserving services and applications.

Biosketch:

Andrea Cavallaro is Professor of Multimedia Signal Processing and the founding Director of the Centre for Intelligent Sensing at Queen Mary University of London, UK. He received his Ph.D. in Electrical Engineering from the Swiss Federal Institute of Technology (EPFL), Lausanne, in 2002. He was a Research Fellow with British Telecommunications (BT) in 2004/2005 and was awarded the Royal Academy of Engineering teaching Prize in 2007; three student paper awards on target tracking and perceptually sensitive coding at IEEE ICASSP in 2005, 2007 and 2009; and the best paper award at IEEE AVSS 2009. Prof. Cavallaro is Senior Area Editor for the IEEE Transactions on Image Processing; and Associate Editor for the IEEE Transactions on Circuits and Systems for Video Technology and IEEE Multimedia. He is a past Area Editor for the IEEE Signal Processing Magazine (2012-2014) and past Associate Editor for the IEEE Transactions on Image Processing (2011-2015), IEEE Transactions on Signal Processing (2009-2011), IEEE Transactions on Multimedia (2009-2010) and IEEE Signal Processing Magazine (2008-2011). He is vice chair of the IEEE Signal Processing Society, Image, Video, and Multidimensional Signal Processing Technical Committee and an elected member of the IEEE Video Signal Processing and Communication Technical Committee. He is a past elected member of the IEEE Multimedia Signal Processing Technical Committee and of the IEEE Signal Processing Society, Image, Video, and Multidimensional Signal Processing Technical Committee, and chair of its Awards committee. Prof. Cavallaro has published over 230 journal and conference papers, one monograph on Video tracking (2011, Wiley) and three edited books: Multi-camera networks (2009, Elsevier); Analysis, retrieval and delivery of multimedia content (2012, Springer); and Intelligent multimedia surveillance (2013, Springer).