Tutorial Proposal for PCM2007

Sports Video Content Analysis and Applications

Changsheng Xu, Institute for Infocomm Research, Singapore
Hanqing Lu, National Lab of Pattern Recognition, Chinese Academy of Sciences, China

In recent years extensive research efforts have been devoted to sports video content analysis and applications due to their wide viewer-ship and high commercial potentials. Technologies and prototypes have been developed to automatically or semi-automatically analyze sports video content, extract semantic events or highlights, intelligently adapt, enhance and personalize the content to meet users' preferences and network/device capabilities. Many applications have been developed and used in broadcasting video enhancement such as multi-camera based 3D virtual sports events, virtual ads insertion for sports video, and motion analysis systems for sports training, etc.

The aim of this tutorial is to provide a brief overview of general video content analysis techniques and a comprehensive overview of the technical achievements in the research area of sports video analysis and applications. We first cover feature extraction methods, which include low-level feature extraction, mid-level representation creation and high-level semantics detection in sports videos. Next, we present the state of the art in sports video analysis from the following three aspects: structure analysis, event detection, content adaptation and enhancement. We also address the issues concerning test data preparations and performance evaluations for sports video analysis systems. Based on the current technologies used in sports video analysis and the demands from real-world applications, future promising directions and research challenges are discussed at the end of the tutorial. This tutorial is intended for educators, researchers, engineers, students and people interested in gaining an overall understanding of video content analysis and sports video analysis and applications.

This tutorial has been successfully conducted in PCM 2004, PCM 2005 and PCM 2006.