Chapter 4
Computer Vision Based Classification on Commercial Videos

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ABSTRACT

Computer vision is a study which is concerned with automatic mining, analysis, perception, and extraction of the essential information from a single frame or image and a sequence of frames. It focuses on the development of automatic visual perception systems to reconstruct and interpret a three-dimensional scene from two-dimensional images through the properties of the structures in the scene. This is a challenging task for the contemporary computer vision system. Hence, this chapter explores the essential information, processing, analysis, and understanding necessary for computer vision. This enables users to retrieve product-based advertisement content and efficient browsing of desired shows. The final goal of this chapter is to design electronic embedded systems focused on technology integration with a domestic utility concept.

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1. INTRODUCTION

Technological developments and applications have provided the satellite TV channels with an advanced quality, huge production, and transmission capabilities. In the massive collection of digital video processing, video indexing and retrieval, browsing, video categorization and video classification are the mainstream techniques are the key areas of interest for researchers and scholars. The primary objective of the computer vision is to formulate the computers for efficient perception, processing, and understanding visual information of the frames in videos. The ultimate goal is for computers to imitate the perceptual ability of human eyes and brains. Also, it exceeds the human capability and be an assistant for the human in many ways. Computer vision is applied in the field of robotics, medicine, security, transportation, image and video database and human-computer interface. Interpreting the multimedia information is a broad area of research. Nowadays people have access to a tremendous amount of videos on YouTube through the internet and Television. The recent technologies in multimedia used to deliver the audio and video be it streaming, progressive download, webcasting, IP conferencing, podcasting, video blogging. It is about using the right mix of multiple distribution technologies to reach the right audience with the right type of content. Videos can be delivered in an accurate live stream. There are some potential problems with delivering video and audio. To overcome the problem, video streaming or video classification is the best initiative in the multimedia industry. In the review of video classification, a significant number of techniques have been attempted in performing video indexing and retrieval systems, summarization, browsing, spatial - temporal continuity, video annotation, concept-based video retrieval and content-based video retrieval, etc. The research on video classification has intended of classifying the entire videos into broad genre classification, limited domain classification, and semantic content classification. At the top level of hierarchy, video database can be organized into a different genre such as cartoon, sports, commercials, news, and music. At the second tier, domain videos can be categorized into different subcategories. At the floor level, a video sequence itself can be segmented and classified as its semantic contents. Video classification helps new technology to support more effective video access over a large scale database and also for supporting more powerful video search engines. An advanced technology development is needed for the available video databases. Many different attempts have been tried by the researchers with great success. Brezeal et al. (2008) presented a detailed literature study about automatic video classification approaches and also described the low level features such as text features (closed caption, speech recognition and OCR), audio features and visual features (color based features, MPEG, short based feature, motion and object based feature) and statistical methods for video classification. Sadlier et al.
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