Video Signal Analysis and Quality Enhancement

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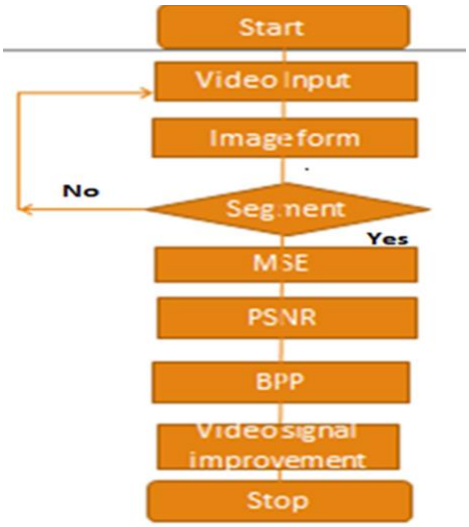
Abstract -- An apparatus for detecting scene changes in audio/video signals is disclosed, together with video recording and logging apparatus employing such detection. The means for detecting scene changes comprises a filtering arrangement which receives and filters the audio soundtrack accompanying the video signal to periodically determine a background audio signal level. By comparison of current and previously determined background levels, a scene change is flagged when the current background audio level differs from a previous background level by more than a predetermined amount. A table of scene change locations may then be built up and stored with the video and audio data.

Index Terms: MATLAB software, PSNR (Pixel signal to noise ratio) BPP (Bit per pixel

I. INTRODUCTION

Digital video has become an integral part of everyday life. It is well-known that video enhancement as an active topic in computer vision has received much attention in recent years. The aim is to improve the visual appearance of the video, or to provide a "better" transform representation for future automated video processing, such as analysis, detection, segmentation, and recognition. Moreover, it helps analyses background information that is essential to understand object behavior without requiring expensive human visual inspection. There are numerous applications where digital video is acquired, processed and used, such as surveillance, general identity verification, criminal justice systems, civilian or military video processing. More and more video cameras are widely deployed in many scenarios e.g. Public places, production Plants, domestic surveillance systems etc. Most of the video cameras work in the open air which means the quality of video depends on the weather conditions. The camera and video surveillance systems are expected effective in all lighting and weather conditions, but the majority of these cameras were not designed for low-lighting, therefore the poor capture quality of video camera makes the video unusable for many applications in bad conditions e.g. dark night, soaking rain, heavy snow and fog. Over the last several decades, there have been substantial capability improvements in digital cameras including resolutions and sensitivity. Despite these improvements, however, modern digital cameras are still limited in capturing high dynamic range images in low-light conditions. These cameras often rely on automatic exposure control to capture images of high dynamic range, but the longer exposure time often results motion blur. Additionally, image sequences captured in low-light conditions often have low signal -to-noise ratio (SNR). When the illumination is very low, the level of noise becomes relatively higher than the signal, so conventional de noising techniques cannot be applied. Design an effective and fast low lighting video enhancement is a challenging problem. Many approaches are developed for enhancing low-light video however most of them consider video from moderately dark conditions.

In this project, we aim to develop a novel framework to enhance video from extremely low-light environments. Our method consists of temporal noise reduction, contrast enhancement and de noising. The Software tool used is MATLAB.



II. CONCLUSION

Through this paper video signal analysis and quality enhancement is discussed .system has advantage improvements in local sharpness and contrast thus be employed in encoding application.

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