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# REVIEW PAPER ON VIDEO PROCESSING

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***Abstract***—Video processing involves the analysis of video data. It encompasses a wide range of tasks, basic operation like video editing to advanced tasks such as object tracking and recognition. Video processing in traffic applications also we can incorporate in other important application such as in sports etc. In this paper we can figure out the simultaneous speed calculations of two or more vehicles in traffic applications also in other applications. Video processing is a combination of hardware and software components, with dedicated processors often used to accelerate certain tasks. Various programming libraries and frameworks, such as OpenCV, FFmpeg, and TensorFlow, provide tools for implementing video processing algorithms. The specific techniques and tools used depend on the goals and requirements of the application in which video processing is applied.

*Index Terms*—FFmeg, Tensorflow

## INTRODUCTION:

Processing involves the manipulation and analysis of video data to achieve various goals, such as enhancement, editing, compression, or computer vision tasks. Here are some key aspects and techniques related to video processing: Video Capture: Capture Devices: Videos can be obtained from various sources, including webcams, digital cameras, smartphones, and other recording devices. Frame Rate: The number of frames captured per second, determining the smoothness of motion in the video. Video Enhancement: Color Correction: Adjusting color balance, brightness, contrast, and saturation. Noise Reduction: Removing unwanted artifacts or noise from the video. Image Stabilization: Correcting shaky or unstable footage. Video Editing: Cutting and Trimming: Removing or shortening specific parts of the video. Merging and Concatenation: Combining multiple video clips into a single video. Transitions and Effects: Adding visual effects, transitions, and overlays. Video Compression: Codec: Video codecs (e.g., H.264, H.265) compress video data for efficient storage and transmission. Bitrate: Controlling the amount of data used to represent each frame. Computer Vision, Object Detection, Identifying and tracking objects within a video stream. Motion Detection: Detecting changes or movements in the video. Facial Recognition: Identifying and tracking faces in a video. Video Analysis: Frame-by-Frame Analysis: Analyzing each frame individually for specific patterns or features. Temporal Analysis: Analyzing changes over time, such as tracking object trajectories.

Video Playback and Display: Displaying the video on a screen, considering factors like resolution and aspect ratio. Playback Speed will adjust the speed of video playback. Deep Learning in Video Processing; Neural Networks, using deep learning models for tasks like image and video classification, segmentation, and generation. Action Recognition: Identifying and categorizing actions or activities within a video. Augmented Reality (AR) and Virtual Reality (VR) overlay information by adding digital elements to the real-world video with 360 Degree Video Processing. Handling immersive video content, streaming, broadcasting live streaming: Broadcasting video content in real-time over the internet. Adaptive Bitrate Streaming: Adjusting video quality based on network conditions. Video pro- cessing isa multidisciplinary field that intersects with computer vision, signal processing, multimedia, and artificial intelligence. The specific techniques and tools used depend on the goals of the video processing task at hand. Describes a method for segmenting the background and extracting moving objects in a surveillance video using a combination of compressive sensing and matrix decomposition techniques.

Compressive Sensing (CS): Video Acquisition: The surveillance video is acquired using compressive measurements. Compressive sensing is a technique that allows for efficient data acquisition and reconstruction, particularly useful in scenarios where limited data can be collected. Re- construction: The measurements obtained are used to reconstruct the video. CS aims to recover the original video from a significantly reduced set of measurements. This is achieved through mathematical algorithms that exploit sparsity in the data.

Matrix Decomposition: Low Rank and Sparse Decomposition: The matrix formed by stacking image frames of the surveillance video is de- composed into two components: a low- rank matrix and a sparse matrix. These components are essential for distinguishing between the background and moving objects in the video. Decomposition Method: The passage mentions that the de- composition is performed using an augmented Lagrangian alternating direction method. This is an optimization technique that iteratively refines the decomposition by adjusting the low-rank and sparse components to the method is tested through experiments to validate its effectiveness. The results of these experiments demonstrate that moving objects can be reliably extracted even when a small number of measurements are available. This is a significant advantage, as it implies reduced data acquisition requirements, potentially making the system more efficient and cost-effective. In summary, the proposed approach leverages compressive sensing for efficient data acquisition and matrix decomposition techniques to segment the background and extract moving objects in a surveillance video.

**CONCLUSION:** Based on the signal process used in video processing,analysis tools for this application will be studied like surveillance video processing using compressive sensing, sprocket, face recognition based on real time video processing.

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