

## Video Generation using Still Images

Neetish Kumar<sup>1\*</sup>, Deepa Raj<sup>2</sup>

<sup>1</sup>Dept. of Computer Science, Babasaheb Bhimrao Ambedkar University (A Central Univ.), Lucknow, 226025, India

<sup>2</sup>Dept. of Computer Science, Babasaheb Bhimrao Ambedkar University (A Central Univ.), Lucknow, 226025, India

\*Corresponding Author: [neetish08537@gmail.com](mailto:neetish08537@gmail.com), Tel.: +91-9006167094

Available online at: [www.ijcseonline.org](http://www.ijcseonline.org)

Accepted: 21/Nov/2018, Published: 30/Nov/2018

**Abstract**— A video is termed as the sequence of kinetic frames captured/ play backed into some sequences. The rapid development of video capturing systems changed the word from recording the still frames on tapes to the storing frame digitally through charge coupled devices. The Video recording system changes from past analog era to digital era which made editing and manipulation very easy. This paper explained how Matlab is used for making the video from the still images and its performance in the sense of storage and time. Different video generation tools are elaborated and compared with the Matlab generated tools.

**Keywords**— Matlab, frames, Video generation, Recording systems, CCD

### I. INTRODUCTION

A video is the visual multimedia source that combines a sequence of images to form a moving picture. Any video recording systems do not actually record videos but the sequence of the still image at the desired frame rate. The human eye can't distinguish delay between the processing of still frames if it can be processed with above 16 frames per second due to the persistence of vision. It gives an illusion of moving videos. The Modulated light (such as a computer display) is perceived as stable when the rate is higher than 50 Hz through 90 Hz frequency. This perception of modulated light as steady is termed as the flicker fusion threshold. However, when the modulated light is non-uniform and contains an image, the flicker fusion threshold can be much higher, in the hundreds of Hertz. In image recognition context; it has been found a specific image in an unbroken series of different images, each of which lasts as little as 13 milliseconds is recognizable. Persistence of vision sometimes accounts for very short single-millisecond visual stimulus having a perceived duration of between 100 ms and 400 ms. The video recording systems change from past analog era to digital era very rapidly. The very first video recording system was accompanied by analog systems e.g. kinescope recording. The recordings generated by the kinescope were of poor quality and cost inefficient, so these were used by those stations that were beyond the reach of cable or microwave interconnections. In 50's era video, the consumer market is fully occupied with the audio tape recorders due to its popularity. This gives a big hint for the video recording that was logically related to the audio but the complexity of video frequency is much higher than audio that concerns problems to the video recordings.

Due to the transition from analog to the digital era, the broadcasters got a valuable tool for video recording. Previously electromechanical irregularities were ubiquitous in analog form of recording. While working with the analog signal, recordings are most vulnerable to noise, a combination of phase modulation, transport jitter, amplifier noise, improper machine line up. In the digital form of recording the above problem got a bit resolved.

The Camera evolution from very first to current scenario has is as follows

1814 – JoesephNiepce Photograph,1837 – The Daguerreotype Camera, 1867 – Zoopraxiscope System, 1895 – Lumiere Portable camera, 1908 – Lighter camera, 1950 – colored video camera, 2007– Flip video era[1]. R. Cutler et al. [1] came across with the new idea of recording techniques of the distributed meeting. H. Pun et al. [2] elaborated the structure of slow-motion replay segments and interpreted Hidden Markov Model for the structure of slow-motion sequences and proposed an inference algorithm to detect the boundaries of slow-motion replay segments. Thomas Meier and King N. Ngan [3] developed segmentation algorithm for video object plane generation that can automatically extract moving objects from a sequence. In 2015 Li Yaho et al. [4] worked with automatic video description generation using artificial intelligence and machine learning and helped to provide a solution for poorly tagged video with natural languages uploaded on YouTube. Kenneth A. et al. [5] studies are focused on high-performance digital color video camera. Canon EOS 1D-C is in working in the current scenario. The digital era begins with Kodak Digital camera [6]. A brief system overview was suggested to capture audio as well as video recording systems. Section II briefly

describes the basic architecture of video camera while Section III exposes the experimental result and analysis. Section IV is the concluding section of our proposed ideas.

**II. ARCHITECTURE OF VIDEO CAMERA**

The architecture of Video Camera is explained in the figure - 1 below which shows how video camera process pictures and create a video. It shows the different hardware components of a standard video camera that is capable of capturing the motion pictures. The outer perspective is captured by the lens and digitized by the charged coupled devices (CCD device). There are some SDRAMs and drivers that are attached to the playback side monitors for storing the captured sequence of frames. There are some features for setting up the desired frame rate for capturing a video by the user. Audio is captured by the separate cable line and compressed through the different audio codecs. Some software components are used in the video camera like JPEG coding and JPG decoding for image preparation, transformation quantization, and entropy coding. There are LCD and USB port, device drivers, Light flash and display device drivers interconnected that is needed to for the complete smooth capturing system [7][8].

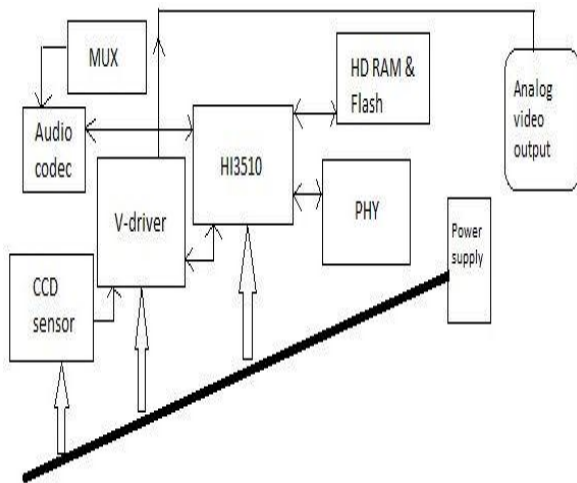


Figure. 1 Architecture of Video camera

**III. EXPERIMENTAL RESULTS AND ANALYSIS**

To generate a video from still images, following steps are followed in MATLAB environment. At first, the n numbers of still images are taken and desired memory space are allocated by using cell () function. All still images are read by imread function from the hard disk or from folders. The images taken are may be of different sizes so it is needed to resize all in similar size as 256\*256. The reason behind it is to make the process computationally efficient. Then all images are converted into frames by im2frame function. After that, the decision of frame rate is decided according to

one's need. With the function writeVideo (), frames are stored into a video file and implay() function is used to execute the video that gives human eye an illusion of motion pictures. Pictorial representation is depicted in Figure -2.

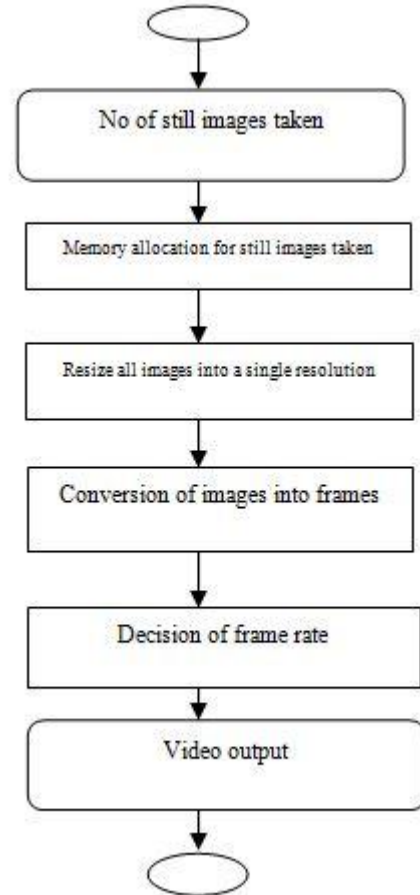


Figure. 2 Flow diagram of generation of Video from still images

Two video generation tools Movie maker and Animoto have been taken for performance measurement in terms of time and space in comparison with Matlab generated software. four test video is taken as Baby\_video11, Baby\_video22, Baby\_video\_grey11 and Baby\_video\_grey22. Still, images are depicted for Baby\_video11 in Figure-3



Figure-3 Still images of Baby\_Video11

For time consideration time elapsed for creating a video Baby\_video11 having 11 frames, it takes 2.649 seconds without any additional effects. The size of the video generated is 591 KB. At this instant, it can be said that MATLAB provides more flexibility in terms of desired frame rate, so the video sequence at the playback side met guaranties of viewers need. For this video, Movie maker takes 11 seconds to execute it. The output video file is shown at the bottom rightmost corner of the above figure 3.



Figure-4 Still images of Baby\_Video22

Another video Baby\_video22, it contains 22 frames, still, images are depicted in figure-4. MATLAB takes 3.584 seconds to execute it. The size taken of the video is 1.03 Mb while movie maker software takes 22 seconds to execute it. The output video file is shown at the bottom rightmost corner of the above figure 4.



Figure-5 Still images of Baby\_video\_grey11

The grey video Baby\_video\_grey11 that have 11 frames takes slightly less time with respect to the color frames processed. 11 frames of the grey image video take 1.124 sec and size acquired is 494 KB. The grey image of another video Baby\_video\_grey22, having 22 frames takes 2.982 sec and occupies 923 KB of space. The size of the video generated by the grey image sequence is also less than the video generated by the color images. Figure-5 and figure-6 show the still images of baby\_video\_grey11 and Baby\_video\_grey22. The output video file with 11 frames and 22 frames is shown at the bottom rightmost corner of the above figure 5 and figure 6 respectively.



Figure-5 Still images of Baby\_video\_grey11

The moviemaker tool takes the total no of time equal to the no of frames processing i.e 22 seconds. Another software of video generation tool Animoto, for generating the video baby\_movie11 takes a 31 second for the completion with the inclusion of special audio and video effects. Without Effect of video and audio, it is not working. After this study, we can say that Matlab is a good plate form for generating any video or still images of any sizes and any quantity very fast and space complexity is also less. Table-1 one shows the performance analysis of the Matlab generated tools with Animoto and movie maker and figure -3 shows the pictorial representation of their performance.

Table 1 Comparison analysis

Test videos	MATLAB software	Moviemaker	No of frames	Size
Baby_video11	2.649 sec	11 sec	11	591 KB
Baby_video22	3.584 sec	22 sec	22	1.03 MB
Baby_video_grey11	1.124 sec	11 sec	11	494 KB
Baby_video_grey22	2.982 sec	22 sec	22	889 KB

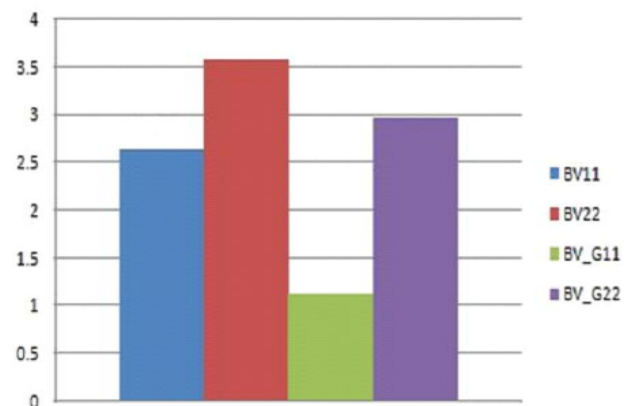


Figure-5 Total elapsed time for each video

#### IV. CONCLUSION

Matlab is a good platform for working on digital image processing application like compression, enhancement, and detection of an object in an image, segmentation and pattern recognition. From the above experimental study, it is concluded that Matlab is also very suitable for working in video processing application. Easily images can be read from file or folder and the frame is also generated by calling simple function `im2frame()`. Video file is generated and all the frames are stored in the video file and execution of the video takes less time and acquire a less space in the memory compare with Animoto and movie maker.

#### REFERENCES

- [1] R. Cutler, "The distributed meetings system", Acoustics, Speech, and Signal Processing, Proceedings (ICASSP '03) on IEEE International Conference on signal processing, 2003, pp. IV-756-9 vol.4.
- [2] H. Pan, P. van Beek and M. I. Sezan, "Detection of slow-motion replay segments in sports video for highlights generation" ,2001 IEEE International Conference on Acoustics, Speech, and Signal Processing, Proceedings (Cat. No.01CH37221), Salt Lake City, UT, 2001, pp. 1649-1652 vol.3.
- [3] T. Meier and K. N. Ngan, "Automatic segmentation of moving objects for video object plane generation", in IEEE Transactions on Circuits and Systems for Video Technology, vol. 8, no. 5, pp. 525-538, Sep 1998.
- [4] LiYaho, AtousaTorabi , "Video Description Generation Incorporating Spatio-Temporal Features and a Soft-Attention Mechanism", Proceedings of the IEEE international conference on computer vision, 4507-4515, 2015
- [5] Kenneth A. Paruiski, Lionel J. D'Luna. Brian L. Benamati, "High-performance digital color video camera", Journal of electronic imaging, 1992
- [6] SamanNaderiparizi, Pengyu Zhang, MatthaiPhilipose, "Glimpse: A Programmable Early-Discard Camera Architecture for Continuous Mobile Vision", MobiSys, 2017, NY, USA
- [7] Neetish Kumar, Dr Deepa Raj, "Video Processing and its Applications: A survey" International Journal of Emerging Trends & Technology in Computer Science (IJETTCS), ISSN 2278-6856.
- [8] Neetish Kumar, Dr Deepa Raj, "A Study and Analysis of Images in Different Color Models", International Journal Of Advanced Studies In Computer Science And Engineering IJASCSE Volume 7, Issue 1, 2018.
- [9] Stephen J. Solari "Architecture of a digital video recorder" 2000
- [10] Luming Zhang, Peiguang Jing, Yuting Su, "SnapVideo: Personalized Video Generation for a Sightseeing Trip", IEEE transactions on cybernetics, 2016

#### Authors Profile

**Neetish kumar**, currently a research scholar of department of computer science of Babasaheb Bhim Rao Ambedkar University, Lucknow.



**Dr. Deepa Raj**, working as an Assistant Professor in the Department of Computer Science Babasaheb Bhim Rao Ambedkar University. She did her Post Graduation from J.K Institute of applied physics and technology, Allahabad University and Ph.D. from Babasaheb Bhim Rao Ambedkar University Lucknow in the field of software engineering. Her field of interest is Software Engineering, Computer Graphics, and Image processing. She has attended lots of National and International conference and numbers of research papers published in her field of interest.

