

## **ABSTRACT**

In this thesis, we propose to generate a High Dynamic Range (HDR) video from images captured by publicly available consumer cameras. The proposed framework creates HDR images from a set of multi-exposed low dynamic range (LDR) images stack. For this stack, the images have been captured and grouped as a set of overexposed, medium exposed, and underexposed for each frame using the Auto Exposure Bracketing mode available on most DSLR cameras. These images are combined quickly, creating high-quality images for a static scene. For dynamic scenes, the scenes are registered with respect to a reference image by an image alignment method and then merged to create an HDR image. These generated images can be viewed directly on the standard displays, whereas the .hdr format images generated need HDR display or need to be tonemapped for standard display. For HDR Video generation, we propose to estimate the intermediary frames for smoother transitions by attenuating the motion between the frames. For this optical flow is computed, and then the estimated flow is warped on the images to determine an intermediary frame. The motion among the frames is attenuated further using phase-based interpolation method, where the phase of two images is estimated, and the phase shift is added with a mask on the image to obtain an intermediary frame. After obtaining the intermediary frames as per the user-defined frame rate, HDR video is generated using these HDR frames generated along with the interpolated HDR frames. This framework can quickly generate short duration HDR-GIF with selected frames. This implementation produces good quality results without any hardware modifications to the consumer grade cameras and also is simple and inexpensive.