

Recent advancements in the domain of generative AI demonstrate the exceptional performance of denoising diffusion models (DDMs), surpassing alternative models in image generation tasks. This work will be specifically oriented towards the in-depth investigation of the denoising diffusion models and their variants, including conditional, video, and random-mask video diffusion models. Utilizing historical data collected by people from Computer Graphics Group (CGG), containing 360° sky images, a series of experiments will be conducted to generate high-quality, optically faithful sky images. These experiments will not only involve the generation of static images but will also extend to generating and predicting sequences of images that can be compiled into a video format.