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Image Synthesis with Neural Rendering

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Abstract

In this research author explores the capabilities of neural rendering techniques and evaluate state of the are neural rendering machine learning techniques under selected parameters. With an objective of providing a simplified software tools to streamline the procedure of neural rendering. Neural rendering focuses on classical volumetric rendering techniques and machine learning techniques in combination to achieve final synthetic outputs. While there has been numerous additions and more discoveries neural rendering stands at a research level. Neural Rendering or Nerf works with a sparse set of inputs neural rendering techniques utilizes the fully connected neural networks to produce volumetric representations of a given scenario. And this pipeline has learning component and a rendering component. With this nature there has been a combination of two principles of practices traditional computer graphic pipeline and machine learning pipeline. Author expands on from a functional level to abstraction level both technical components could benefit from well integration. And in addition to processing stages initial input collection stages which depends on RBG images and spatial coordinates to produce viewing angles and synthetic views could benefit from tools. Yet literature indicates a drift or separation with more evolved tooling and the research-based tooling with the capabilities of neural rendering more evolved volumetric and 3D representational software packages could benefit with enhanced realism and accurate representations. Author provides a collection of curated and structured understanding of the current Nerf pipeline and presents a software tool optimized to compliment traditional 3D representation while adapting the neural rendering synthetic image generation.