

Independent 3D Rendering Software for Engineers

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Background

In order to better ourselves and our university's engineering department's capabilities to perform high quality, photorealistic renderings of 3D CAD assemblies and models beyond current capabilities, in depth looks into KeyShot and Bunkspeed Rendering software were taken. With our past knowledge of 3D modeling and rendering from SolidWorks, and our extensive use of animated and rendered modeling of prototype designs in projects, we wished to determine how beneficial new and more comprehensive rendering software could be in further enhancing Western Kentucky University's student presentations.

Purpose

Visual representations are vital aspects of any engineering presentation to help provide a better understanding of how a project will both look and work in practical settings. As such, standalone rendering software can provide the tools needed to create photorealistic models, allowing students to present their project contacts with realistic images of the project fully scaled and in its actual environment prior to ever building the first prototype. For this purpose, studies into rendering software were undertaken to see how approachable these new tools could be and whether either would be worthwhile to adopt for future student use.

Design/Method

Versions of two different rendering softwares were purchased and installed for testing, one based on graphics card performance called Bunkspeed, and the other based on processor performance called Keyshot. Initial trials using only material mapping on more basic models were done to help familiarize us with the new software and determine the base performance of the software. Once we became adequate users of the tools, more complex renderings were done which take into account texture mapping, environments, lighting, and depth.

Results

Even with little manipulation of the model utilizing simple in-program material mapping, both BunkSpeed and Keyshot were able to provide renders of a quality far beyond the standards of SolidWorks or AutoCAD's built in software. Once the extensive texture, environment, and lighting tools in both programs were taken into account, along with ample experience and artistic talent, both Bunkspeed and Keyshot easily produced renders of near-realistic quality.

Conclusions

After extensive experimentation with a variety of renderings both simplistic and complex, taking into account models simply utilizing higher quality material mapping to projects rendered with complex texture mapping, lighting, and depth of field adjustments, both KeyShot and BunkSpeed provided visibly higher quality borderline-photorealistic images compared to the current software available for student use through SolidWorks. As such, the potential benefit of having one of these high-quality rendering softwares available for student use, even if only on one or two computers on campus, is certainly a worthwhile investment.