COMPARISON OF 3D CLOUD TECHNIQUES FOR THE COMPUTATION OF OBJECT DEPTH INFORMATION FROM LIVE IMAGES

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Abstract

The 3D Scanners, one of the contemporary and preceding technology, is most valuable in conversion of physical real-world object to digital computerized model. As majority of commercial scanners are expensive due to substantial development after their extensive analysis, there is a need for research in the field for development of economical and precise scanners.

The purpose of pursuing this research was to explore, configure, design, and compare different techniques of 3D scanners, capturing technique of 3D point cloud with the accuracy of up-to 100 micro-meters, compare and evaluate the design and lastly increase the output efficiency. The best and most efficiently working system will be used to achieve enhanced techniques and achieve the target of improved accuracy i.e., up to 100 micrometers economically.

The first phase was designed to make test bench of each technique utilized. The scanners system comprises of camera, projector, laser, and a turntable. Every scanner has different technology to construct 3D point cloud. The obtained scanned data were evaluated using VGStudio MAX 2.2 software with the necessary modules.

The second phase of this comparison research consisted of measures for improving the accuracy by applying different filters and lights effects as well as doing some modifications in the design. The result was displayed in terms of Standard deviation by comparing it to standardized scanners.

Lastly the evaluation of 3D point clouds with quantitative results in this study proved the capabilities of scanning of different technology scanners. It can be concluded that improvement in designs will result in higher quality outcomes and the comparison technique employed can prove to be useful in providing guidelines for the detection of metal object depth.

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