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A Study on CAD Modelling and File Generation Issues in Rapid Prototyping

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Abstract: *With the evolution of the RP industry and the advent of RE tools and techniques there is an increased interest in the development of computer aided design (CAD) tools and techniques to decrease the lead time when creating prototypes. This study was performed with the intention of contrasting two methods of input to the rapid prototyping (RP) process, viz., manual modeling (MM) and reverse engineering (RE) techniques. An object was selected to generate CAD models via MM and RE techniques and STL (STereoLithography) files were generated. The plots of file size versus deviation tolerance; and file size versus angular tolerance were developed in order to provide practitioners an opportunity to assess the capabilities of MM and RE approaches in acquiring a better CAD file. From the study results, several observations were made by evaluating the obtained STL file sizes; time taken to create the CAD models, the surface quality of the models, and computer resources required.*

Keywords: *Rapid Prototyping, Reverse Engineering, Manual Modeling, Deviation Tolerance and Angular Tolerance*