Web-based e-Learning development for Engineering Modeling & Visualization

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Abstract

The main objective of this project is to guide the student to draw few models, which is required in the module ME2103. It is separated into five different parts according to the model, namely, Tool Holder, Toggle Lever, Pump Body, Junction Block and Roller Bracket. This paper states out the technical side of the development of the project as well as the process of the project for future references.

Process

Solidworks enable student to learn how to translate a 2D drawing into 3D model, which is an essential to their future engineering field. Still pictures are captured using HyperSnap 5\textsuperscript{3} and CamStudio\textsuperscript{4} is used to record demonstration videos in AVI form. Pictures and videos are important to enhance the process of learning, as students will feel easier with demonstration. The codec\textsuperscript{5} used is MS-Video 4, which is preinstalled in Window XP so that no additional codec needs to be installed when students need to view the demonstration video. Macromedia Dreamweaver is used to create webpages in this project.

One of the difficulty in this project is to draw a model in a time limit during video recording is started. If there is any mistake during the recording process, the recording has to start all over again. Therefore, we need to familiarise which the model by drawing the model few times before we get into recording process.

In this project, I also solved the problem faced by some students during capturing still images such as the difficulty of importing the print screen still image into another vector drawing program and the quality of still images saved by using the drawing program. HyperSnap is used to cut still images on the screen without pressing print screen on our computer. The program is special designed so by pressing CTRL-SHIFT-R, we are able to cut any region on our screen. This program will also create a good quality still images.

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\textsuperscript{3} http://www.hyperionics.com
\textsuperscript{4} http://www.atomixbuttons.com/vsc/
\textsuperscript{5} Known as Compressor and Decompressor which is used to compress certain video to smaller size.
During emigrating process of the information to the webpage, the navigation and the design of the webpage is also concerned. The navigation bar on the left hand side of the webpage allows the students to see the overview steps for modeling tutorial.

Figure 1: Navigation

Figure 2: Drawing
Discussion

This project serves as an online tutor for a student. The model is being drawn step by step with demonstration video to ensure students will able to familiarise with the Solidworks environment. Tutorial time is too short for a student to learn everything from his tutor while by using this webpage, they will able to extend their learning time. They will able to refer back to the webpage when they encounter any problem in the Solidworks and this will definitely save time to travel to campus during weekend.

By doing this project, I am able to revise what I had learnt few months ago. I become more familiar with this software and it serves as an additional skill for me in the future.

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