

AutoCAD Integrated E-learning System Using .NET Programming

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Abstract. It is important to have the tools that help us learn integrated in our day to day software. This way we earn time, we experience computerized learning and become better engineers. With these tools AutoCAD receives a brand new e-learning system; a faculty orientated one and a fast one. The project covers this integration, a tool for teachers to automate drawing verifications and a mobile learning system build in Android.

Keywords: e-learning, .NET, java, android, community, open source

1. AutoCAD .NET Integration

There are numerous ways to extend functionality of this great software called Autodesk AutoCAD like AutoLISP scripting, VB/VBA macros, ObjectARX C++ programming and the final and best one .NET programming.

Due to the fact that I has to build a heavy system on top of this platform and a system that needed to be highly customizable I choose the final method. The programming for the integrated learning system has been done using Visual Basic .NET and C#. The project generated .dll class libraries. Those classed can be loaded inside AutoCAD environment using NETLOAD command or by modifying the software registers.

This package of .dll files adds the following functionalities to the AutoCAD environment:

- Customized graphical user interface (Brand new ribbon panels build using Microsoft's WPF and XAML framework)
- Tutorials (Command line tutorials, basic window tutorials, power point tutorials and video tutorials accessible with just one click)
- Export/import function to and from file types like XML and Excel
- LayerUp (A custom command that creates the necessary layers for a basic drawing and depending on the entity layer type and entity type it assignee's that entity to the correct layer)

2. EvSTUD

EvSTUD is a program programmed in java. It uses the generated XML files created using one of the project custom commands to work. To verify an entire class you first load up a reference

drawing XML file and then load all the students drawing in the form of XML files. The software then automatically compares the XML files one by one with the reference one and gives it a tag in the form of a grade.

All grades appear in a table with the compared drawing in the left side. The teacher can then export the results to PDF or generate statistical charts from them in the form of bar chart or pie chart.

This way the verification, notation and result deployment job of the teacher has been reduced from days into minutes or seconds.

3. AutoSTUD

AutoSTUD is an android device program. It serves as a mini learning system. The student enters the system, and can then take quizzes from AutoCAD courses. The software uses a SQLite database behind.

You can also use this system to store command or information that you are not yet friendly with and later when you need a command just open up the application and take a look at what the command does.

The tests that you take are interactive; you get instant feedback in case you do not get the right answer. At the end of a test you can retry the test, leave the application activity or send the result via SMS.

4. Conclusions

We need better engineers; this software addresses not only faculties but schools to make the learning process faster from the early steps. The project also created a community of developers and users. The main goal was to target the whole range of platform Windows, Linux, Android, to learn as many programming languages as I could and to make the world a better place.

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Visit the project at

www.sourceforge.net/projects/autocadnetinteg