

A Multi-Layer Based Architecture for the Development of an Open Source CAD/CAM Integration Virtual Platform

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Abstract : This article proposes a n-layer architecture, with a web client as a front-end, for the development of a virtual platform for process simulation on CNC machines. This Open-Source platform includes a CAD-CAM interface drawing primitives, and then used to furnish a CNC program that triggers a touch-screen virtual simulator. The objectives of this project are twofold. First one is an educational component that fosters new alternatives for the CAD-CAM/CNC learning process in undergrad and grade schools and technical and technological institutes emphasizing in the development of critical skills, discussion and collaborative work. The second objective puts together a research and technological component that will take the state of the art in CAD-CAM integration to a new level with the development of optimal algorithms and virtual platforms, on-line availability, that will pave the way for the long-term goal of this project, that is, to have a visible and active graduate school in Ecuador and a world wide Open-Innovation community in the area of CAD-CAM integration and operation of CNC machinery. The virtual platform, developed as a part of this study: (1) delivers improved training process of students, (2) creates a multidisciplinary team and a collaborative work space that will push the new generation of students to face future technological challenges, (3) implements industry standards for CAD/CAM, (4) presents a platform for the development of industrial applications. A prototype of this system was developed and implemented in a network of universities and technological institutes in Ecuador.

Keywords : CAD-CAM integration, virtual platforms, CNC machines, multi-layer based architecture

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