Separating Hardware from Software Approach to Ease Enginnering Students' Work

M. Abdallah
State University of New York
Polytecnic Institute
abdallm@sunyit.edu

Abstract

Advanced information technology provides students access to a wide range of learning experiences. One of the challenges of the on-line forum is exposure to hands-on experience. There currently exist disparate components of technology that are suited to address specific needs in the Engineering, Math, & Science (ESM) as well as the Engineering Technology (ET) departments. The crux of this paper is to investigate and validate, at the educational unit level, a new concept of bring the state-of-the-art technology to enhance pedagogical on-line learning approaches for both students and faculty. Creating a dynamic and efficient learning environment with ubiquitous access to computing and laboratory resources is the main goal in this paper. Additionally, this new alternative environment is expected to provide enhancements to the current on-line instructional model in electrical and computer engineering technology programs. Furthermore, it will be an effective test bed for new educational technology.

The proposed idea is separating hardware from software. The software will be installed in the campus/server-side. A school will host it including the license and upgrading issues. The hardware will be managed via students. Students will be able to locally connect their hardware to their computers and still be able to remotely access the developing tools. The proposed idea is different than the well-known software remote access. In the software remote access such as Matlab, a student can access the Matlab from his/her computer and the Matlab itself is installed in the school campus side. Since there is no hardware board or sensors connected to the student's computer, it is a sufficient process. On the other hand, if a hardware board such as Altera FPGA board is connected to a student's computer, local software is needed in the student machine. Most of the software is expensive to be bought by students. Therefore, separating hardware from software is needed. In this paper, a novel approach is proposed to allow a student's computer, that is connected to hardware, to run remote software on the campus side via a novel USB-module.

Biographies

M. Abdallah is currently an assistant professor and program coordinator for Computer and Electrical Engineering Technology at the SUNY Poly. He has published more than 50 conference papers and journal articles.