

Embedding Mixed-Reality Laboratories into E-Learning Systems for Engineering Education

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Abstract:

E-learning, virtual learning and mixed reality techniques are now a global integral part of the academic and educational systems. They provide easier access to educational opportunities to a very wide spectrum of individuals to pursue their educational and qualification objectives. These modern techniques have the potentials to improve the quality of the teaching and learning process and elevate its performance to higher standards. Furthermore, e-learning in conjunction with mixed reality techniques can reduce the cost of higher education at both institutional and individual learner levels.

In this paper, the focus will be on teaching-learning of applied science such as engineering. These studies demand special requirements, such as acquiring specific technical skills and practices through training. Our objective in this paper is the explanation and design of remote laboratories in mixed-reality mode. Decision making and evaluation of performance using fuzzy logic will be embedded in the proposed design.

Keywords: *e-learning, engineering education, virtual labs, remote labs, mixed- reality, fuzzy decision making.*