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DEVELOPMENT OF WEB-BASED HUMAN INTERFACE LABORATORY PLATFORM FOR MECHATRONICS MODULE

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Abstract. *An innovative learning method, modern learning was born under the development of instructional technology. Using communication and network technologies, web-based learning is performed remotely, bi-directionally and interactively, beyond the limitations of time and space. Current technology enables remote access to laboratory equipment via the Internet, which is particularly useful for part-time students learning. The web-based human interface laboratory platform enables students to access expensive or highly specialized laboratory equipment which may otherwise be unavailable to students. This article establishes user-friendly and efficient technology for interactive, and on-line laboratory experiment learning utilizing the web. In its current configuration, the proposed method provides a learning platform to students using the actual mechatronics module. Preliminary assessment of the human interface laboratory platform is encouraging and demonstrates its effectiveness in helping students understand the concepts, which is necessary to master basic technologies for developing web-based mechatronics monitoring and control systems.*

Keywords: Web-based, Human interface, Mechatronics

1. **Introduction.** With the mass proliferation of the web, interesting possibilities have emerged for extending its use into new areas. A rapidly growing part of the university laboratory encompasses the increasing engineering education market. The Internet offers potential for laboratory access to students who can participate using no technical equipment other than a personal computer. For example, household electronic devices such as lights, appliances, climate-control systems and surveillance cameras can be linked to the Internet through wired or wireless networks [1]. The Internet can also be used as the infrastructure for industrial applications. An Internet-based control, monitoring, and operation scheduling system for heating, ventilation, and air-conditioning systems were presented [2]. A web-based design and control system for regional optical IP networks has been investigated [3].

Web-based teaching provides a new paradigm for imparting knowledge. Emerging Internet technologies and international multimedia standards can be combined with educational objectives to provide a wide range of learning activities and accomplishments which is not possible to have using traditional lecture-based materials [4]. The advantages are (1) the ability to provide more individualized instruction with immediate and direct feedback performance than that can be offered using conventional teaching, and (2) the provision of simulations within the teaching materials to engage the students and greatly enhance the learning outcome [5,6].

The remote control concepts suitable for classroom teaching have been examined [7-9]. Most researchers focused on the development of remote control laboratories for student