Integrating Microcontroller-Based Projects in a Human-Computer Interaction Course

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Abstract : This paper describes the design and application of a short in-class project conducted in Algoma University’s Human-Computer Interaction (HCI) course taught at the Bachelor of Computer Science. The project was based on the Maker Movement (people using and reusing electronic components and everyday materials to tinker with technology and make interactive applications), where students applied low-cost and easy-to-use electronic components, the Arduino Uno microcontroller board, software tools, and everyday objects. Students collaborated in small teams by completing hands-on activities with them, making an interactive walking cane for blind people. At the end of the course, students filled out a Technology Acceptance Model version 2 (TAM2) questionnaire where they evaluated microcontroller boards’ applications in HCI classes. We also asked them about applying the Maker Movement in HCI classes. Results showed overall students’ positive opinions and response about using microcontroller boards in HCI classes. We strongly suggest that every HCI course should include practical activities related to tinkering with technology such as applying microcontroller boards, where students actively and constructively participate in teams for achieving learning objectives.

Keywords : maker movement, microcontrollers, learning, projects, course, technology acceptance

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