Internet of Things in Higher Education: Implications for Students with Disabilities

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Abstract : The purpose of this abstract is to share the findings of a recently completed disability-related Internet of Things (IoT) project undertaken at Curtin University in Australia. The project focused on identifying how IoT could support people with disabilities with their educational outcomes. To achieve this, the research consisted of an analysis of current literature and interviews conducted with students with vision, hearing, mobility and print disabilities. While the research acknowledged the ability to collect data with IoT is now a fairly common occurrence, its benefits and applicability still need to be grounded back into real-world applications. Furthermore, it is important to consider if there are sections of our society that may benefit from these developments and if those benefits are being fully realised in a rush by large companies to achieve IoT dominance for their particular product or digital ecosystem. In this context, it is important to consider a group which, to our knowledge, has had little specific mainstream focus in the IoT area –people with disabilities. For people with disabilities, the ability for every device to interact with us and with each other has the potential to yield significant benefits. In terms of engagement, the arrival of smart appliances is already offering benefits such as the ability for a person in a wheelchair to give verbal commands to an IoT-enabled washing machine if the buttons are out of reach, or for a blind person to receive a notification on a smartphone when dinner has finished cooking in an IoT-enabled microwave. With clear benefits of IoT being identified for people with disabilities, it is important to also identify what implications there are for education. With higher education being a critical pathway for many people with disabilities in finding employment, the question as to whether such technologies can support the educational outcomes of people with disabilities was what ultimately led to this research project. This research will discuss several significant findings that have emerged from the research in relation to how consumer-based IoT can be used in the classroom to support the learning needs of students with disabilities, how industrial-based IoT sensors and actuators can be used to monitor and improve the real-time learning outcomes for the delivery of lectures and student engagement, and a proposed method for students to gain more control over their learning environment. The findings shared in this presentation are likely to have significant implications for the use of IoT in the classroom through the implementation of affordable and accessible IoT solutions and will provide guidance as to how policies can be developed as the implications of both benefits and risks continue to be considered by educators.
Keywords : disability, higher education, internet of things, students