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Author Name: Kevin Trinh
Author Company: Ryerson University
Second Author's Name: Alan Fung
Abstract Title: THE DESIGN AND DEVELOPMENT OF AN ENERGY FEEDBACK RESEARCH PLATFORM FOR RESIDENTIAL ENERGY CONSERVATION

Abstract Text:

In the field of residential energy conservation, providing tenants with feedback on their energy use has been shown an effective intervention, promoting savings ranging from 4-12%. However, advancements in feedback design have been hindered by methodological limitations, the lack of specification of visual feedback designs, and a poor understanding of the behavior changes that are induced by feedback. To help address these issues, this paper introduces a reconfigurable feedback research platform that leverages an Internet of Things approach with free and open-source software. The platform is capable of delivering near real-time feedback, as well as historical and social comparisons of energy use. The platform collects data energy use, level of user engagement, as well as qualitative data from in-situ surveys. This presentation details the design and specifications of an implementation of this platform in a Multi-Unit Residential Building (MURB) in Toronto, Canada as both a demonstration of the technology as well as part of a field study examining the efficacy of real-time social comparisons. The field study is part of an ongoing year-long conservation program with 28 tenants to be completed in the Fall of 2015. Preliminary findings are reported.