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Application of building information modeling in SHM sensors' visualization, data management and identification of their optimal placement in a building

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This paper investigated the feasibility of utilizing building information modeling (BIM) in modeling structural health monitoring (SHM) system elements such as SHM sensors and their optimal placement in a building. A case study building was modeled in Revit structure 2016 with all its specifications and then exported to ETABS (Extended 3D Analysis of Building Systems) for structural analysis purpose to identify the effective locations for installing SHM sensors such as strain sensors. The model was then imported to Revit to update the Revit model. Strain sensors were modeled in Revit with all their essential parameters and were placed in their designated locations in the building model. The sensor models were validated in an external visualization tool namely solibri model viewer using industry foundation class (IFC) type file of the Revit model to demonstrate whether the virtual sensors in Revit are recognized by external tools as an IFC element. It is intended that these integrated environment could be used as the basis for integration of BIM and SHM to have an effective real-time monitoring system for smart environment.

Biography

Azin Shakibabarough graduated with BS degree in Civil Engineering from University of Mazandaran, Iran in 2008. After receiving Bachelor's degree, she worked about three years as a Civil Engineer in a building company. She received her Master's degree in the field of Construction Management from University Technology Malaysia in 2013. She is currently a PhD student of Civil Engineering at Concordia University of Montreal Canada. Her research interests include structural health monitoring (SHM), infrastructure sustainability and construction project management. She has authored/coauthored 16 articles in technical journals and conferences. She won Concordia University International Tuition Fee Remission Award.

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