CIES 2017, IEEE Symposium on Computational Intelligence for Engineering Solutions

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Title: On the Impact of Computational Intelligence on Structural Dynamics

Abstract: This paper discusses how methods of Computational Intelligence (CI) have contributed substantially to the understanding and solution of problems in Structural (Engineering) Dynamics. The paper begins by breaking the history of dynamics into a number of eras, with the most recent being the Computational Intelligence Era. The paper then outlines what was possible before and after the beginning of the CI era; detailed discussions of three specific contexts are given, namely: Nonlinear System Identification (NLSI), Condition Monitoring (CM) and Structural Health Monitoring (SHM). Finally, the paper presents a case study illustrating the use of advanced CI methods on a problem in bridge SHM.