

Civil and Environmental Engineering Department Seminar

Incorporating Automation and Artificial Intelligence in Performance-Based Earthquake Engineering

Henry V. Burton, S.E., Ph.D.

University of California, Los Angeles

March 18, 2021, 12:45 – 2:00 PM

Join Zoom Meeting

URL: <https://cwru.zoom.us/j/92502635986?pwd=dkZEMWVocGZWLOUvQlJudlM4bHl5Zz09>

Meeting ID: 925 0263 5986 Passcode: 151477

Abstract

The recent (within the last decade) success of machine learning (ML) applications in areas such as bioengineering, medicine and advertising has been highly visible. This has created a domino effect where others have begun to ask whether their respective fields of practice, including structural engineering, can be transformed or “revolutionized” by ML. Structural engineering researchers began to explore ML applications in the field as early as the late 1980s. However, it is only within last five years that the community of structural engineering researchers and practitioners have begun to seriously explore ways in which ML can improve the efficiency and/or accuracy of specific tasks or solve previously intractable problems. As with other fields, some have expressed legitimate concern that the potential benefits of ML to our field are being overhyped, and in the worst case, exploited for marketing purposes. This paper will discuss the areas of current and potential application of automation and machine learning applications in performance-based earthquake engineering.

Bio sketch



Dr. Henry V. Burton is an Associate Professor and the Englekirk Presidential Chair in Structural Engineering in the Department of Civil and Environmental Engineering at the University of California, Los Angeles. His research is directed towards understanding and modeling the relationship between the performance of infrastructure systems within the built environment, and the ability of communities to minimize the extent of socioeconomic disruption following extreme events. Dr. Burton is a registered structural engineer in the state of California. Prior to obtaining his PhD in Civil and Environmental Engineering at Stanford University, he spent six years in practice at Degenkolb Engineers, where he worked on numerous projects involving design of new buildings and seismic evaluation and retrofit of existing buildings. He is a recipient of the National Science Foundation Next Generation of Disaster Researchers Fellowship (2014) and the National Science Foundation CAREER Award (2016).