DATA-DRIVEN MODELING USING UNCERTAINTY QUANTIFICATION, MACHINE LEARNING AND OPTIMIZATION

TRACK NUMBER 1700

ROGER GHANEM*, JAMES STEWART†, MIGUEL BESSA ††, KRISHNAKUMAR GARIKIPATI †††, AND C. ALBERTO FIGUEROA †††

*University of Southern California
3600 S. Vermont St., Los Angeles, CA 90089

†Sandia National Laboratories
Albuquerque, NM
jrstewa@sandia.gov

††TU Delft
Delft, The Netherlands

†††University of Michigan
krishna@umich.edu figueroc@med.umich.edu

Key words: Uncertainty quantification, Machine learning, data science

ABSTRACT

Data-driven approaches are opening new avenues in computational mechanics and materials science. This minisymposium focuses on (1) recently developed methods for data-driven approaches, and (2) data-driven applications to fluids, structures and materials involving (but not limited to) machine learning, uncertainty quantification and/or optimization. Contributions addressing specific challenges relevant to this topic such as reduced order modeling and high-performance computing are also encouraged. Ideally, this minisymposium will reflect the generality of data-driven science and its broad applicability to the computational mechanics and materials science communities.