DATA-DRIVEN METHODS IN SITE CHARACTERIZATION: OPPORTUNITIES AND CHALLENGES

JOSEPH P. VANTASSEL[*] AND BRADY R. COX[†]

[*]Assistant Professor, Civil and Environmental Engineering, Virginia Tech
750 Drillfield Drive, 200 Patton Hall, Blacksburg VA 24061
Email: jpvantassel@vt.edu; Website: https://cee.vt.edu/people/faculty/vantassel.html

[†]Professor, Civil and Environmental Engineering, Utah State University
4110 Old Main Hill, Logan, UT 84322
Email: brady.cox@usu.edu; Website: https://engineering.usu.edu/cee/people/faculty/cox-brady

ABSTRACT
Data-driven methods are and will-continue to fundamentally change how geotechnical engineers perform site characterization. Readily-accessible tools for developing data-driven models from machine and deep learning are enabling geotechnical engineers (i.e., non-machine learning experts) to utilize their data to innovate the planning and execution of site characterization efforts. This is due in large part because data-driven methods are well-suited to areas important to site characterization, including: the automation of tedious, repetitive, and time-consuming tasks, synthesis of disparate data sources, and identification of anomalous data for further review. As such, the utilization of data-driven methods are only expected to increase as more data are available and the geotechnical community becomes better prepared to extract value from those growing data sources. Therefore, the objective of the proposed mini-symposia is to gather researchers and practitioners to discuss the opportunities and challenges associated with the use of data-driven methods in geotechnical site characterization. The mini-symposia particularly encourages submissions that highlight recent developments, future potential directions, and on-going challenges with the utilization of data-driven methods in geotechnical site characterizations. Submissions on topics related to the use of data-driven methods to combine and synthesize different sources of geotechnical data, the role and responsibilities of the geotechnical engineer in an increasingly data-driven world, the challenges around data and model sharing, and the effective verification and review of data-driven models are particularly encouraged. In addition, the mini-symposia will include time for open-discussion amongst the presenters and attendees. Through this mini-symposia the conveners hope to produce an open and insightful dialogue around the current use of data driven methods, the challenges being faced in the community, and how we can overcome these challenges to unlock the full potential of data-driven methods in geotechnical site characterization.