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SS-02: Recent Advances in Software Developments for Risk, Reliability, and Uncertainty Quantification

Adolphus Lye[1], Chen Yu[2], Matteo Broggi[3], and Edoardo Patelli[4]
[1] National University of Singapore, Singapore
[2] University of Liverpool, United Kingdom
[3] Leibniz University Hannover, Germany
[4] University of Strathclyde, United Kingdom
snrltsa@nus.edu.sg; yu.chen2@liverpool.ac.uk; broggi@irz.uni-hannover.de; edoardo.patelli@strath.ac.uk

Description

Risk and Uncertainty analyses typically involve machine-learning techniques to perform the necessary data analysis and numerical estimates. With the advancement of Artificial Intelligence capabilities, and its increased interest within the field of Risk, Reliability, and Uncertainty quantification (R2UQ) in engineering, the sophistication of the computational methodologies implemented to solve complex real-world engineering challenges have evolved correspondingly. This motivates the need to develop sophisticated software and computational codes to address the various engineering problems within the R2UQ context.

For this reason, the proposed special session aims to provide a platform to discuss and share the latest developments in the computational software and codes in this context, as well as some of the best practices in curating and documenting open-access codes for readers to study and implement such codes.

By the end of the special session, the attendees should have:

- A better appreciation of the current challenges in performing risk, reliability, and uncertainty analyses in engineering
- An awareness of the state-of-the-art software and computational codes that are developed and available
- An understanding of some best practices in code sharing and curation

Topics of Interest

Topics of interest include (and are not limited to):

- Review of computational challenges in R2UQ
- Computational methods in R2UQ
- Commentary on best practices for code-sharing and curating