

# Towards autonomous digital twins: uncertainty, data, computing, simulation, and ethics

University of Strathclyde

30<sup>th</sup> November 14:00

1<sup>st</sup> December 10:00

Cyber-physical systems with increased complexity and scale present ongoing challenges for engineers and researchers. Digital twins are an emerging technology that combine time-evolving combinations of physics-based and data-driven models with a coupling to a physical system to enhance its functionality. The complexity and scale of these systems towards automation create a need for safety and reliability procedures to be integral part of these systems. The reliability of these systems must be actively implemented by means of scientific methods that take explicit account of the uncertainties. Challenges in relation to the uncertainty in the data, the verification of scientific numerical calculations, the validation of simulation models with the empirical data, and the risks that autonomous systems pose to humans.

This symposium is bringing together internationally recognized scholars active in uncertainty quantification, digital engineering, computing and human factors. The aim of the symposium is to establish a working group on uncertainty for digital twins with a strong methodological and mathematical twist. Such a working group has the goal to connect and fast track works in special sessions, as well as attracting talents and eminent personalities both from industry and academia. The working group aligns with the committee themes: *mathematical and computational methods in reliability and safety, uncertainty analysis, and imprecise probability.*

Register for Zoom link and location: <https://forms.gle/nyjvbgjt7YzgHQbb7>

Register for Strathclyde user: <https://forms.office.com/e/uLFDViWvka>

<https://sites.google.com/view/esra-digital-twins/>

