Digital Twins: Enhancing Model-based Design with AR, VR and MR

Course Content –

Digital Twin in Model-Based Engineering

- Application examples in operations optimisation, control system design, and predictive maintenance
- Cloud & deployment in production systems

Introduction to MATLAB & Simulink

- Analyse data for a digital twin
- Run a Simulink model and interpret results

Digital Twin Simulation

- Approaches to simulation: first principle, componentised, data-driven, simulators
- Generating synthetic data from simulations

Introduction to Simscape

- Create a model for a simple component
- Simulate an electrical fault in a motor
- The role Digital twins in Model Based Systems Engineering (MBSE) recap

Introduction to Data-Driven modelling

Digital Twin & AI

- Fit an ML (machine learning) model to create a surrogate model
- Detection

Digital Twin & VR-AR-MR

- Playback, co-sim, & integration workflows
- ROS (Robot Operating System) & ROS Toolbox