Cyber Physical System Driven Digital Twin for Industry 4.0

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Abstract Michael Grieves et al. defined the term Digital Twin as the one that mirrors a physical product based on integrated multi-physics, multi-scale simulation. In recent times, digital twin concept has gained momentum in various industrial applications such as in manufacturing, utilities, oil and gas, mining, process automation and so on. A digital twin defines a model based on the multi-physics model, data-driven AI/ML model, and discrete models. In this talk, we give an overview of how the industry is embracing the digital twin in its Industry 4.0 journey. We provide an overview of various modelling approaches and specifically focus on discrete models. We discuss multiple simulation scenarios and how digital twin based simulations are useful in analyzing various characteristics of the physical system.

Keywords digital twin, modeling, simulation, analysis