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Analytics-Driven Cyber-Physical Security for a Converged Smart Grid

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Abstract

The field of cyber-physical security has evolved greatly over the last decade especially in the context of critical infrastructures such as the smart grid. The current challenges aim to address the increased sophistication of cyberattacks in the context of a more automated grid. Emerging polymorphic and stealthy attacks necessitate more coordinated and intelligent approaches to mitigation. In addition to the typical defence-in-depth paradigm, more harmonized protection and resilience strategies are essential. Development of next-generation tools for cyber-physical security requires the adoption of effective models that are compatible with salient trends in smart grid infrastructure including Information Technology/Operational Technology (IT/OT) convergence. The resulting data-rich cyber-physical environment from IT/OT convergence suggests a strong need for greater data-driven modelling paradigms and analytics. In this talk, we provide examples of deep learning in the context of anomaly detection for the cyber-physical protection of transmission protection systems. We then present a brave new world of opportunities for smart grid cyber-physical security using a data analytics-driven approach.