An AI-enabled Cyber Risk Management Model for Determining Ripple Effects from Cybersecurity and Other Supply Chain Disruptions

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Abstract

The evolution of supply chain networks toward digital environments increases operational complexity and requires reliable communication to regulate information exchange. The extensive use of digital platforms inexorably increases their exposure to cyberattacks. We present an AI-based framework that enables the characterization of complex supply chain networks, collecting sub-tier suppliers' cyber risk information in real-time and determining ripple effects from cybersecurity and other disruptions. By representing and replicating the collective behavior of relevant supply network nodes, businesses can monitor and measure the effects of cybersecurity disruptions and test the reconfiguration options that minimize the detrimental impact on the supply network.