Spectral Analysis for Attack Detection

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Résumé

Medical IoT networks face significant cyber threats that compromise system accessibility, patient confidentiality, and data communication security. Our study introduces a novel detection method using spectral graph analysis. This mathematical technique, based on the Laplacian matrix's spectral properties, provides insights into network topology changes by analyzing networks as dynamic graphs over time. This method enables us to track spectral variations over time, enabling the early detection of cybersecurity threats. The spectral analysis shows the detection of the attacks over the Bot-IoT and Ton-IoT datasets, that consist of both benign and simulated malicious network traffic.

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