عنوان مقاله:

Epidemiological Model for Stability Analysis of Wireless Sensor Network under Malware Attack

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خلاصه مقاله:

Malware attack is growing day by day in cyberspace. And Wireless Sensor Network (WSN) is also facing a hazardous type of situation due to attack of malware (malicious code, virus, worm etc.). Malwares target sensor nodes easily because, nodes are equipped with limited resources. Hence, security of WSN against malware attack is one of the imperative requisite. Malware spreads in the entire network wirelessly, which initiates from single infectious node and spread in the whole WSN. In this way the complete network comes under the security threat. Therefore, it is mandatory to apply the security technique through which to secure WSN against malware attacks. To secure WSN due to malware attacks a quarantine based model has been proposed. The proposed model consists of various epidemic states namely: Susceptible Carrier - Infectious - Quarantine - Recovered - Susceptible (SCIQRS). The model explained the propagation dynamics of malware in WSN and proposed a technique to prevent its propagation. The technique of quarantine along with recovery is to much effective in prevailing of malware propagation in WSN. For the determination of WSN stability and equilibrium points the expression of basic reproduction number has been obtained. Malware propagation is affected by different network parameters, which has been also discussed. The comparative investigation of proposed model has been carried out with existing model. The proposed model has been substantiated by simulation outcomes

کلمات کلیدی:

Basic Reproduction Number, Malware Security, Stability, Wireless Sensor Network