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Data Analysis and Security Development of a Wireless Mesh Network

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A multiple router, low-power mesh wireless network with multi-hopping networking capabilities was developed at the Physics building ground floor. Multi-point data between routers was collected over an extended period of time. This study contributes to the analysis of the data for an anti-theft application, based on the future work of the research 'System Control Applications of Low-power Radio Frequency Devices' (S.A.I.P 2017). Data packets were sent between multiple mesh routers and quantitative experimental data was collected consisting of latency delays and packet losses. The network performance, based on statistical analysis, has indicated reliable interconnected node communications even in the presence of physical obstacles in the environment. To extend the study, an algorithm is proposed for implementation on an Android application of the device and application layer of the routers. This is to ensure secure communications within the mesh components. Secure communications between the device and the network will result in normal device operation while device locations outside the coverage perimeter may render the device inoperable. The added security feature allows secure communications of devices connected to the network and prevents unauthorized connections such as black-hat hacking.

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