UNIVERSITI TEKNOLOGI MARA

DETECTING REMOTE-TO-LOCAL (R2L) ATTACK USING DECISION TREE ALGORITHM

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ABSTRACT

The "Remote to Local (R2L) Intrusion Detection System Using Decision Tree" project aims to address the escalating threat of network intrusions by developing an effective intrusion detection system. The background study emphasizes the increasing significance of network security and the prevalence of various types of network intrusion attacks, particularly Remote to Local (R2L) attacks. The problem statement underscores the need for robust intrusion detection mechanisms to safeguard against unauthorized access and potential data breaches. The objectives of the project include conducting a comprehensive literature study, collecting relevant data, and preprocessing the dataset. The system design phase encompasses the development of system architecture, flowcharts, pseudocode, and interface design. The implementation phase focuses on the deployment of the Decision Tree algorithm and system evaluation through functionality testing. The key results encompass dataset preprocessing, Decision Tree classification model training, user interface development, and the evaluation of the Decision Tree model's performance. The project successfully achieves its predetermined objectives, culminating in the development of an effective Remote to Local (R2L) Intrusion Detection System utilizing the Decision Tree algorithm. The trained model achieved commendable test accuracy of 97.26% while maintaining a low false alarm rate and miss rate, scoring approximately 3.61% and 2.19% respectively, this result ensuring a robust and efficient approach to R2L intrusion detection. The project also acknowledges its limitations and provides recommendations for future work, emphasizing the potential for further enhancements in subsequent revisions. This endeavor serves as a crucial initial step towards fortifying network security and mitigating the risks associated with network intrusion attacks.

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