University of Texas Rio Grande Valley

Department of Informatics and Engineering Systems

Past Capstone Project Abstracts

Bachelor of Science in Cybersecurity

Fall 2023

Advanced Vulnerability Assessment with Machine Learning

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Abstract:

With the increased amount of information generated from security devices and tools, there is a growing need to automate the process of sifting through the data and categorize it according to severity levels. This project aims to implement a machine learning algorithm to categorize a dataset sourced from Nessus, a network vulnerability scanner. The objective includes enhancing vulnerability management

and prioritizing vulnerabilities for improved network security.

The project comprises several key tasks: data extraction, cleaning, and preprocessing for accuracy. Advanced machine learning algorithms categorize the criticality of vulnerabilities based on features used for training the model. Deliverables include output of accuracy from machine learning classifier with data visualizations.

Upon completion of this project, this project categorizes critical assets within an organization and contributes to redefining how vulnerabilities can be addressed in the field of cybersecurity. The incorporation of machine learning showcases the project's impact on enhancing both asset management and utilizing emerging trends and strategies to address security vulnerabilities within organizational infrastructures.