MORGAN STATE UNIVERSITY
DIVISION OF RESEARCH AND ECONOMIC DEVELOPMENT
OFFICE OF TECHNOLOGY TRANSFER

Executive Summary

Automated Calculation of a Risk Decision for a Textual Document using Probabilistic Neural Network

Innovation

The invention relates to a method for determining whether a document is safe for viewing, without malicious code embedded in it. It is based on text mining processes and classification of textual documents using a probabilistic neural network (PNN) classifier. Textual documents can be evaluated by a user whether the document is safe to accept it, deny it, or quarantine it for further investigation, and this invention allows for an automated calculation of risk. The purpose is to develop an effective method to predict the Common Vulnerability Score System (CVSS) score that a text document would receive. Therefore, a user can now make an informed decision of whether to accept the document into an organizational or user network environment. Finally, scripts are developed to parse and import data from text documents into the PNN for proper classification of the document.

Market Need

In a multi-billion dollar market, it was estimated that as many as 60 percent of all malware was transmitted through some form of document, including through PDFs or Microsoft Office products, e.g. The larger the time gap to identify the vulnerability, the higher the possible risk to the organizational network, so a solution is badly needed. Models have been developed to lower the risk of cybersecurity focusing on the strategic level, but the problem can also be approached from the user/client level. This innovation lowers the risk from the client level systems with an emphasis on allowing or not allowing text documents within a network based on user decision. Additionally, integrating the use of CVSS metrics to assist in the decision analysis is more reliable.

Intellectual Property

Morgan State filed the non-provisional U.S. Patent Application No. 17/110,662 in December 2020.

Stage of Development

Inventor has shown that using the elements of textual data mining and a vulnerability database, an accurate classification could be determined using a PNN. Results can be depicted through tools such as heat maps. Files that enter a network can immediately be categorized as acceptable, subject to quarantine, or outright denied.

Technology Transfer Opportunity

All organizations, including government, industry, and non-profits, can benefit from a product based on this technology, given the transmission of word processing documents, presentations, and PDFs. Exclusive licenses can be issued by the Office of Technology Transfer for specific fields of use or for all applications.

Key Investigators:
- Garfield Jones

Field(s) of Use:
- Computer Science/Engineering
- Cybersecurity

Key Words:
- Text
- Risk
- Neural Network
- Email
- CVSS

Advantages:
- Applied to email with text attachments across file formats
- Automated
- At user/client level, so they can make decision in real-time

Status:
Non-provisional patent filed in December 2020.

Links:
Inventor Bio

Reference Number:
088/2020

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