Ministry of Higher Education and
Scientific Research
University of Babylon
College of Information Technology
Department of Information Security
Study: Morning

Classifying Malware From Images With Neural Networks

A Graduate Project Submitted to the department of Information Security of the College of Information Technology, University of Babylon, in Partial Fulfillment of the Requirements for the Bachelor's degree in the Information Security of Information Technology.

By

Basmal Alaa Hamdi Hakeem

Supervised by
Assist. Prof. Dr. Ahmed Khelfa Al-Ajeli

2023-2024

Abstract

Malicious software, or malware, poses a significant threat to digital security in network devices and computer systems. As a result, several methods have been proposed to detect and prevent these threats. Among them, deep learning has emerged as one of the most effective techniques. In this project, Convolutional Neural Networks (CNNs) are utilized to distinguish malware samples from normal behavior by transforming malware samples into visual representations for classification. CNNs excel in learning from pixel data, which enables accurate identification of malware types based on these images. This research optimizes CNN architectures to enhance precision in classification, contributing to advancements in cybersecurity and strengthening defenses against evolving threats. It highlights the role of deep learning in enhancing traditional cybersecurity methods and offers insights into image-based malware classification, showcasing a novel approach to bolster digital security. These outcomes represent significant progress in leveraging deep learning for proactive cybersecurity measures. Overall, the study demonstrates successful application of CNNs in converting malware samples into visual representations for classification, achieving high accuracy in identifying malware types from images.