xNIDS: Explaining Deep Learning-based Network Intrusion Detection Systems for Active Intrusion Responses

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https://www.usenix.org/conference/usenixsecurity23/presentation/wei-feng

This artifact appendix is included in the Artifact Appendices to the Proceedings of the 32nd USENIX Security Symposium and appends to the paper of the same name that appears in the Proceedings of the 32nd USENIX Security Symposium.

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A Artifact Appendix

A.1 Abstract
We present xNIDS, a novel framework that facilitates active intrusion responses by explaining DL-NIDS. Our artifact includes the proposed explanation method dedicated to explaining DL-NIDS.

A.2 Description & Requirements

A.2.1 Security, privacy, and ethical concerns
This artifact can be used by users anywhere, but it should be utilized strictly for research purposes and in adherence to good ethical practices.

A.2.2 How to access
This artifact is publicly available at https://github.com/CactiLab/code-xNIDS/releases/tag/v2023.1.0.

A.2.3 Hardware dependencies
The demo code is hardware-independent and can be optimized for execution on Google Colab.

A.2.4 Software dependencies
To run the code, the following software packages are required: Python, TensorFlow, Keras, NumPy, pandas, scikit-learn, Matplotlib, psutil, and asgl.

A.2.5 Benchmarks
The benchmark datasets utilized in this artifact are the NSL-KDD and Kitsune datasets.

A.3 Set-up

A.3.1 Installation
To access the code, kindly download it from the following link https://github.com/CactiLab/code-xNIDS/tree/main.

A.3.2 Basic Test
The demo code is written in Jupyter Notebook and can be executed on Google Colab.

A.4 Version
Based on the LaTeX template for Artifact Evaluation V20220926. Submission, reviewing and badging methodology followed for the evaluation of this artifact can be found at https://secartifacts.github.io/usenixsec2023/.