

# 基于 NDNN 的入侵检测系统

王萌, 王亚刚, 韩俊刚  
(西安邮电大学 计算机学院, 陕西 西安 710121)

**摘要:** 本文设计了一种新的深度神经网络(New Deep Neural Network, NDNN)模型,并将其应用到入侵检测系统中.NDNN 以其突出的特征学习能力充分学习训练数据的特征,在输出层,NDNN 通过 Softmax 分类器对网络攻击报文与正常报文数据进行识别和分类,检测异常报文与入侵攻击.实验通过对 KDD Cup 99 数据集进行仿真,实验结果表明本文设计的基于 NDNN 的入侵检测系统模型,进一步提高了入侵检测系统的精度,增强了网络的安全性.  
**关键词:** 深度神经网络; 入侵检测; KDD Cup 99

## Application of Deep Learning in New Intrusion Detection System

WANG Meng , WANG Ya-gang, HAN Jun-gang  
(School of Computer Science, Xian University of Posts and telecommunications, Xi'an 710121, China)

**Abstract:** We design a New Deep Neural Network (NDNN) model and apply it to the intrusion detection system, which is based on the feature learning experiment of the deep structure. NDNN has an outstanding characteristics of learning ability, so it can fully study the characteristics from the training data. In the output layer, NDNN identify and classify the attack and normal messages and detect intrusion attacks through the Softmax classifier. Through the simulation experiment in the KDD Cup 99 data set, this paper designs a intrusion detection system model NDNN which further improve the accuracy of the intrusion detection system and enhance the security of the network.

**Key words:** NDNN; intrusion detection; KDD Cup 99

### 作者简介:

王萌女,(1994-),硕士研究生.研究方向为图像处理、深度学习.E-mail:13720547046@163.com.  
王亚刚男,(1972-),博士,副教授.研究方向为嵌入式系统、编译器与并行计算.  
韩俊刚男,(1943-),硕士,教授.研究方向为图形处理器和形式化验证.