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|    |                                    |   |
|----|------------------------------------|---|
| 1. | Name of the Research Scholar       | M. Kalaivani  |
| 2. | Roll No. and Year of Registration  | 18PHCSP005, 2018  |
| 3. | Department                         | Computer Science  |
| 4. | Name of the Research Guide         | Dr. G. Padmavathi   |
| 5. | Title of the Thesis / Dissertation | Complexity Aware Intelligent Intrusion Detection for DDoS Attacks |
| 6. | Similarity Content (%) Identified  | 5%  |
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File size: 5.64M  
Page count: 125  
Word count: 26,096  
Character count: 149,495  
Submission date: 18-Jan-2025 02:48PM (UTC+0530)  
Submission ID: 2333625884

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### CHAPTER 1 INTRODUCTION

Today's digital infrastructures globally are under high risk of being attacked by DDoS attacks (Husák et al., 2019). These assaults can only be done using sophisticated equipment to determine malicious behavior in huge network traffic. To advance IDS, complexity-aware intelligent intrusion systems with higher feature engineering are necessary (Aamir, M., & Zaidi, S. M. A., 2019). It is the aim of this thesis to enhance feature engineering as an approach to intelligent DDoS incursion detection. The developed detection systems in the research are based on cutting-edge feature selection methods and ML algorithms. As an interconnected digital environment grows, such enhanced machinery will immensely facilitate the identification of DDoS attacks with regard to important data and infrastructure.

#### 1.1. Security

DDoS attacks are a challenge to digital infrastructure security. Some of the contemporary approaches to DDoS prevention are often ineffective, particularly when firewalls cannot adapt to the change by themselves and do not recognize intrusion patterns. This research provides a new system to enhance security in complex digital networks (Yu, Z et al., 2021). The research applies intelligent IDS to enhance security for financial and online shopping firms; data breach in such firms can lead to severe consequences.

IDS is integrated into digital structures to find out about suspicious or unlawful action. Traditional IDS are not suitable for dynamic structures. As a result of their distributed nature and the contemporary infrastructure of the modern world, DDoS attacks are very hard. The anomaly-based approach proposed in this research to address these problems intrusion detection system for sophisticated digital networks. This method seeks to overcome the difficulties of protecting digital systems by identifying invasions with great accuracy. The efficiency of the suggested strategy in improving security and reducing the dangers of DDoS assaults is examined in terms of performance on relevant data.

# Complexity Aware Intelligent Intrusion Detection for DDoS Attacks

*by* Central Library Avinashilingam

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**Submission date:** 18-Jan-2025 02:48PM (UTC+0530)

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**File name:** exity\_Aware\_Intelligent\_Intrusion\_Detection\_for\_DDoS\_Attacks.doc (5.64M)

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