

CERTIFICATE

This is to certify that the thesis entitled “Complexity Aware Intelligent Intrusion Detection For DDoS Attacks” submitted to Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, in partial fulfilment of the requirements for the award of the **Degree of Doctor of Philosophy in Computer Science**, is a record of original research work done by **M. Kalaivani** during the period of her study in the Department of Computer Science at Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, under my Supervision and Guidance and the thesis has not formed the basis for the award of any Degree/ Diploma/ Associateship/ Fellowship or other similar title to any candidate of any University.


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DECLARATION

I, **Kalaivani M**, hereby declare that the thesis entitled “**Complexity Aware Intelligent Intrusion Detection For DDoS Attacks**” submitted to Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, in partial fulfilment of the requirements for the award of the **Degree of Doctor of Philosophy in Computer Science**, is a record of original research work done by me during the period of my study under the Supervision and Guidance of **Dr. G. Padmavathi, M.Sc., M.Phil., Ph.D.**, Dean & Professor, Department of Computer Science at Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, and it has not formed the basis for the award of any Degree/ Diploma/ Associateship/ Fellowship or other similar title to any candidate of any University.

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LIST OF TABLES

Table No.	Title	Page No.
1.1	Year-wise overview of major DDoS attacks	14
2.1	Literature Study on Various techniques in DDoS detection	24
2.2	Literature on various IDS in Intrusion Detection	28
2.3	Summary of Various Datasets used in attack detection	31
2.4	Literature on various Feature selection methods and its Pros and Cons	32
2.5	Summary of CI techniques with Machine and Deep Learning used in DDoS attack detection	38
4.1	Pseudocode for the proposed Combined filter for feature selection method	59
4.2	Pseudocode for the Decision Tree Classifier	61
4.3	Pseudocode for the SVM Classifier	62
4.4 a	Features selected using Filter methods	63
4.4. b	Combined Filter for Feature Selection (CFFS)	63
4.5	Parameters setup in Weka	64
4.6	Accuracy rate values	65
4.7	Precision rate values	66
4.8	Recall rate values	67
4.9	Time values	68
4.10	False Positive Rate values	69
4.11	Error rate values	70
4.12	F-Score rate Values	71
4.13	Performance Measures	72
5.1	Pseudocode for the Dragonfly Optimization Algorithm	78
5.2	Dragonfly Optimization Algorithm Parameter Configurations	80
5.3	Accuracy values of the proposed Strategic level framework	90
5.4	Recall values of the proposed Strategic level framework	91
5.5	Precision values of the proposed Strategic level framework	92
5.6	F-Score values of the proposed Strategic level framework	93

Table No.	Title	Page No.
5.7	FPR values of the proposed Strategic level framework	94
5.8	Error Rate values of the proposed Strategic level framework	95
5.9	Detection Time values of the proposed Strategic level framework	96
5.10	Proposed framework model's execution and calculations	96
6.1	Pseudocode representation of the Panthera Leo Optimization (PLO) algorithm	105 107
6.2	Pseudocode for the proposed approach in Phase III	109
6.3	Settings for the Proposed PLO-MLFFN Parameters	112
6.4	Metric values of different IDS at the ratio of 80:20	113
6.5	Metric values of different IDS at the ratio of 70:30	114
6.6	Metric values of different IDS at the ratio of 60:40	115
6.7	Metric values of different IDS at the ratio of 50:50	116
6.8	Comparative Evaluation of the Various IDS with Regard to Effective Attack Processing Time	129
7.1	Pseudocode for proposed GRU-Based Feature Extraction and Classification with Integrated Self-Attention Mechanism	131
7.2	Hyper parameters employed in the proposed network's training	132
7.3	Performance metric values for CICDDoS2019 Dataset	133
7.4	Performance metric values for UNSW2019 Dataset	134
7.5	Performance metric values for NSL-KDD+ (Train) Dataset	135
7.6	Performance metric values for NSL-KDD+ (Test) Dataset	138
7.7	Comparison of Various Algorithms with Various Datasets on Model Built Time	141
8.1	ANOVA Results for Proposed CFFS-DT method and other methods evaluated in Phase I	143
8.2	ANOVA Results for Proposed IDOA-DT method and other methods evaluated in Phase II	145
8.3	ANOVA Results for Proposed PLO-MLFFN method and other methods evaluated in Phase III	147
8.4	ANOVA Results for Proposed AEGRN-DFFN method and other methods evaluated in Phase IV	147

LIST OF FIGURES

Figure No.	Title	Page No.
1.1	Cyberattacks against Cybersecurity Fundamentals	3
1.2	Example Scenario of DDoS attacks	5
1.3	DDoS attacks classification	6
1.4	DDoS attack vector classification	8
1.5	Single vector DDoS Flooding attack scenario	9
1.6	Multi vector DDoS Flooding attack scenario	10
1.7	Methods to handle Cyber-Attacks	11
1.8	Increase in DDoS Attacks on Organizations in 2023	15
1.9	Prevalence of DDoS Attacks Targeting the Financial Sector in 2023	16
2.1	Summary of Computational Intelligent Techniques	37
3.1	Overview of the Proposed Research Methodology	44
3.2	Research Design	50
4.1	Proposed Methodology for Phase I	54
4.2	Accuracy rates	65
4.3	Precision rates	66
4.4	Recall rates	67
4.5	Time of proposed Methods	68
4.6	False Positive Rates	69
4.7	Error rate	70
4.8	F-Score rates	71
4.9	ROC Curve of proposed methods in Phase I	73
4.10	Performance of the Proposed Approach with Single and Multi vector Flooding attacks detection	74
5.1	Proposed Framework for Phase II	82
5.2	A bar graph illustrating the traffic type distribution in the CICDDoS2019 dataset	89

Figure No.	Title	Page No.
5.3	Accuracy of the proposed Strategic level framework	90
5.4	Recall of the proposed Strategic level framework	91
5.5	Precision of the proposed Strategic level framework	92
5.6	F-Score of the proposed Strategic level framework	93
5.7	False Positive Rates of the proposed Strategic level framework	94
5.8	Error Rate of the proposed Strategic level framework	95
5.9	Detection Time of the proposed Strategic level framework	96
5.10	ROC Curve of proposed detection framework in Phase II	97
5.11	The bar model displays the DDoS Flooding attack detection model's ten-step validation procedure	98
5.12	The accuracy graph of the proposed model for multiple DDoS attacks and multi-vector flooding attacks	99
6.1	Framework for Panthera Leo Optimized Multilayer Feed Forward Learning for Multiple DDoS Attack Detection in Phase III	103
6.2	Confusion Matrix of the proposed model in Phase III	110
6.3	Comparative Evaluation of the Various IDS at the 80:20 dataset ratio	112
6.4	Comparative Evaluation of the Various IDS at the 70:30 dataset ratio	113
6.5	Comparative Evaluation of the Various IDS at the 60:40 dataset ratio	114
6.6	Comparative Evaluation of the Various IDS at a 50:50 dataset ratio	115
6.7	Comparative analysis of the different attack types using the proposed method in phase III	119
7.1	Proposed Architecture for the GRU-SA-FF in Phase IV	123
7.2	Network Architecture (GRU)	125
7.3	Performance Comparison using CICDDoS2019 Dataset	132
7.4	Performance Comparison using UNSW2019 Dataset	133

Figure No.	Title	Page No.
7.5	Performance Comparison using NSL-KDD+ (Train) Dataset	134
7.6	Performance Comparison using NSL-KDD+ (Test) Dataset	135
7.7	Validation Performance of the suggested Model using distinctive datasets a) CICDDoS2019 datasets b) UNSW-datasets c) NSL-KDD datasets (Train) d) NSL-KDD datasets (Test)	137
8.1	Bar chart on ANOVA Results for Proposed CFFS-DT method and other methods evaluated in Phase I	142
8.2	F-Distribution Curve with Critical and Calculated F-Statistics for Hypothesis Testing on proposed approach in Phase I	142
8.3	Bar chart on ANOVA Results for Proposed IDOA-DT method and other methods evaluated in Phase II	143
8.4	F-Distribution Curve with Critical and Calculated F-Statistics for Hypothesis Testing on proposed approach in Phase II	144
8.5	Bar chart on ANOVA Results for Proposed PLO-MLFFN method and other methods evaluated in Phase III	145
8.6	F-Distribution Curve with Critical and Calculated F-Statistics for Hypothesis Testing on proposed approach in Phase III	146
8.7	Bar chart on ANOVA Results for Proposed AEGRN-DFFN method and other methods evaluated in Phase IV	147
8.8	F-Distribution Curve with Critical and Calculated F-Statistics for Hypothesis Testing on proposed approach in Phase IV	148
8.9	ANOVA results comparison for the proposed models	148

ABBREVIATIONS

ABID	–	Anomaly Based Intrusion Detection
ACK	–	Acknowledgement
AEGRN	–	Attention Enabled Gated Recurrent Network
AI	–	Artificial Intelligence
ANN	–	Artificial Neural Networks
BPL	–	Backward Packet Length
CAIDA	–	Center for Applied Internet Data Analysis
CFFS	–	Combined Filter for Feature Selection
CI	–	Computational Intelligence
CIC	–	Canadian Institute for Cybersecurity
CIDD	–	Cloud Intrusion Detection Dataset
CS	–	Chi-Square
CSE	–	Communications Security Establishment
DARPA	–	Defense Advanced Research Projects Agency
DDoS	–	Distributed Denial of Service
DFFN	–	Deep Feed Forward Network
DL	–	Deep Learning
DNS	–	Domain Name System
DoS	–	Denial of Service
DT	–	Decision Tree
ELM	–	Extreme Learning Machine
FD	–	Flow Duration
FFNN	–	Feed Forward Neural Network
FN	–	False Negative
FP	–	False Positive
FPL	–	Forward Packet Length
FPR	–	False Positive Rate
FS	–	Feature Selection
FTP	–	File Transfer Protocol
GR	–	Gain Ratio
GRU	–	Gated Recurrent Units
HIDS	–	Host-based Intrusion Detection Systems

HTML	–	Hypertext Transfer Protocol
IAM	–	Identity and Access Management
ICMP	–	Internet Control Message Protocol
ID	–	Intrusion Detection
IDOA	–	Improved Dragonfly Optimization Algorithm
IDS	–	Intrusion detection system
IEEE	–	Institute of Electrical and Electronics
IG	–	Information Gain
IP	–	Internet Protocol
IPS	–	Intrusion Prevention System
LR	–	Logistic Regression
LSTM	–	Long-Short-Term Memory
ML	–	Machine Learning
MLFFN	–	Multi Layer Feedforward Network
MLP	–	Multiplayer Perceptron
MSE	–	Square Error
NB	–	Naive Bayes
NIST	–	National Institute of Standards and Technology
NN	–	Neural Network
PLO	–	Panthera Leo Optimization
QoS	–	Quality of System
RF	–	Random Forest
ROC	–	Receive Performance Curve
RMSE	–	Root mean squared error
SVM	–	Support Vector Machine
SYN	–	Synchronize
TCP	–	Transmission Control Protocol
TFP	–	Total Forward Packets
TN	–	True Negative
TP	–	True Positive
U2R	–	User to Root
UDP	–	User Datagram Protocol
XSS	–	Cross-Site Scripting