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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M. Kalaivani

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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