Faculty of Engineering and Technology

Major Project Work/Internship – Student Log Book

Project Batch ID

NWCO76

Name of student	Register Number	Department	Mobile Number	Email ID
Anshumaan Mishra	RA1811028010076	CSE	9619048802	am2747@srmist.edu.in
		CSE		

Degree/ program	B.Tech	**Specialisation**	Computer Science and Engineering with Specialization in Cloud Computing
Academic Year	2021-2022	**Semester**	8
Course Code	**18CSP107L/ 18CSP108L**	**Course Title**	Major Project

Working Title of the Project:	**Intrusion Detection using a neural Network**
Project Site / Location	Offline
Name and address of the company / organisation (Applicable for projects with industry or industry support)	SRM University, Kattankulathur, Chengalpattu District-603203

Supervision Team

	Supervisor	Co-Supervisor	External Supervisor (If applicable)
Name	Dr Vigneshwaran Pandi		
Designation	Associate Professor		
Department	Networking and Communications		
Campus	Kattankulathur		
Telephone	99941947994		
E-mail	vigneshp@srmist.edu.in		

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Mission Statement

Problem (or) Product Description:
Communication between devices in a network requires transporting data from one device to another. For
This reason data packets are present in the network carry some data from sender to receiver and vice-versa
For example, the three-way TCP handshake process needs to complete in order to to establish a link with
the sender and receiver ports of two devices. To perform reconnaissance an attacker sends data packets
using unique protocols, this generates malicious traffic in the network. Attackers may try their best to
hide the traffic generated by them. To find the malicious traffic inside a network a network intrusion.
detection system is put in place to detect abnormal traffic. In this work we have coded a neural network
to identify the malicious traffic present in a network dataset. The dataset we used have multiple instances
of abnormal traffic, our Neural Network seeks to learn and predict network samples.
Assumptions and Constraints
Stakeholders

Division of work and contributors

Time period		Activities or components of the project	Name/Register Number of the Individual Contributor	Names/Register Number of the Joint Contributors
From Date	To Date			
02/01/22	01/02/22	Collating a dataset	Anshumaan Mishra	
02/02/22	21/02/22	Configuring a neural network	Anshumaan Mishra	
22/02/22	03/03/22	Performance enhancement	Anshumaan Mishra	
04/03/22	04/04/22	Accuracy Metrics	Anshumaan Mishra	
05/04/22	05/05/22	Developed a user interface	Anshumaan Mishra	

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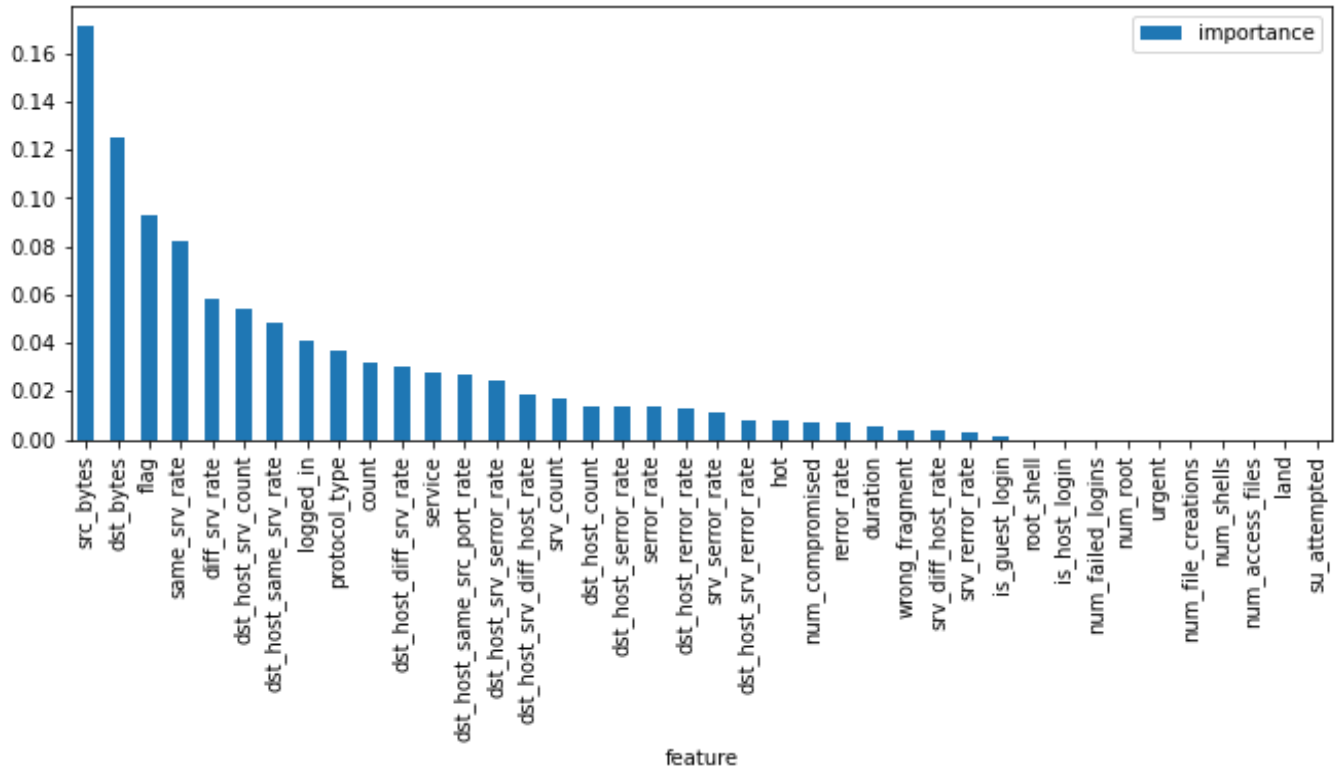
Summary record of major progress meetings with supervisors

Summary record of major progress meetings with supervisors			**Working title of dissertation/research project:**	
Meeting date & supervisors present	**Progress since last meeting**	**Agreed programme of work and target dates**	**Other issues, e.g. facilities, supervision, training needs, etc.**	**Date of next meeting**
1/02/22 Dr. Vigneshwaran Pandi	NA	Selection of appropriate training data 20/11/21	NA	02/03/22
02/03/22 Dr. Vigneshwaran Pandi	Selected a neural network along with the dataset	Selection of an appropriate configuration for the neural network 18/03/22	NA	18/03/22
18/03/22 Dr. Vigneshwaran Pandi	Performed feature reduction	Selection of an appropriate configuration for the neural network 26/04/22	NA	19/04/22
19/04/22 Dr. Vigneshwaran Pandi	Worked on creating a user interface for the project	Making the User Interface better 26/04/22	NA	26/04/22

26/04/22 Dr. Vigneshwaran Pandi	Created Project Report and did a plagiarism check	Minor changes in report required	NA	NA

Worksheet / Data collection / Observation etc

Feature importance



Features Selected

- src_bytes
- dst_bytes
- count
- srv_count
- same_srv_rate

Table I Confusion Matrix

Threshold	True Negative	False positive	False negative	True positive
0.6	6814	1431	87	9302
0.7	6890	1355	161	9228
0.8	7192	1053	1339	8050
0.9	8245	0	9389	0

TABLE II results obtained after using the Confusion Matrix

		METRICS		
Probability threshold	Class type	Precision	Recall	F-Measure
0.7	Normal	0.89	0.81	0.85
	Anomaly	0.85	0.91	0.88
0.8	Normal	0.84	0.83	0.84
	Anomaly	0.85	0.86	0.86
0.9	Normal	0.75	0.87	0.81
	Anomaly	0.87	0.74	0.80

Journal Publication

Anshumaan Mishra, Vigneshwaran Pandi. (2022). Intrusion Detection using a Feed Forward Neural Network. International Journal of Intelligent Engineering and Systems (submitted to journal)

Anshumaan Mishra, Vigneshwaran Pandi. (2022). Classifications of E-MAIL SPAM using Deep Learning Approaches. IOS press (submitted to journal)