Ministry of Information Technology
Government Of Pakistan

Ignite
NATIONAL TECHNOLOGY FUND
(Formerly National ICT R&D Fund)

National Grassroots ICT Research Initiative – (2017-18)

Application Form for Funding of Final Year Project (FYP) Nominated by University/Institute

(Please submit the signed & stamped copy of this document latest by 28th February 2018)

University/Institute Detail:

Name of University/Institution	NED University of Engineering & Technology	University/Campus Address:	Main Campus, NED University of Engineering & Technology University Road, Karachi - 75270, Pakistan
Telephone & Fax No:	(92-21) 99261261-8 & (92-21) 99261255	Department Name:	Computer & Information Systems Engineering
City:	Karachi	Province:	Sindh

Nominated Project Details:-

Project Supervisor Name and Designation:	Dr. Muhammad Asad Arfeen , Assistant Professor	Contact Details:	Email: arfeen@neduet.edu.pk Cell No: 0333 3913678 Off No: 021-99261261 EXT: 2243
Project Supervisor Qualification:	• PhD (University of Canterbury, Christchurch, New Zealand) • M.Engg (Computer Systems) • BE (Computer Systems) • HEC Approved PhD Supervisor	No of Publications of Supervisors:	8
Students Name(s):	1. Fatima Iqbal 2. Insha Siddiqui	Students Mobile No:	1. 03343043908 2. 03442606046
Students CGPA	1. 3.67 2. 3.63	Students Email:	1. fatima.iqbal96@yahoo.com 2. inshasiddiqui795@gmail.com
Degree Programme/ Title:	BE	Area of Specialization*:	Computer and Information Systems Engineering

** Preferred areas are Artificial Intelligence, Cloud Infrastructure, Cyber Security, Internet of Things, Augmented and Virtual Reality, Wearables and Implantable, Shared Economy, Robotics, 3D/4D Printing, NeuroTech and Blockchain.*

Final Year Project Details:

A.	**Project Title:**	Multilayer Framework For Intrusion & Fraud Detection In Online Systems & Transactions (Lead-Security)
B.	**Project Start Date:**	15/November/2017
C.	**Project Finish Date:**	11/August/2018

D. Project Summary (less than 200 words)	

Multilayer framework for intrusion and fraud detection is a financial security based desktop application which is used to protect online transactions as done by many e-commerce and banking websites. The purpose of this application is to provide a single platform for secure online money transactions, on multiple layers of Open Systems Interconnection (OSI) network model, it will analyze web traffic for anomaly detection on network layer and also perform detection of any fraudulent activity in system on application layer.

As it is a multilayer framework so it will take transaction information (transaction time, type, amount etc.) by web form as an input for fraud detection and after applying algorithm of machine learning, classifies transaction into fraudulent or legitimate one.

Different features of network packets header (duration, protocol name, service name etc.) which will extract after sniffing use as an input for anomaly detection in network traffic.

E. Project Objectives:	

Our objective is to develop a multilayer network intrusion detection system, it is basically a framework to secure online transactions. It will do web traffic analysis for anomaly detection on transport layer using deep learning and perform credit card fraud detection at application layer.

F. Project Implementation Method	

1. Application will start by after following a sign in procedure.
2. A sniffer will be used to capture payload part and network packet headers of transaction.
3. This information is then parsed to send to their respective module.
4. Intrusion detector option of the system will analyze network traffic then a trained module is used to detect any anomaly.
5. Credit card fraud detector will analyze the features of transaction and then classify it into fraudulent or legitimate using an already trained model.
6. A suitable algorithm of machine learning or deep learning will be used in order to train the system module

G. Key Milestones of the Projects with dates			

S.No	Elapsed time since start of the project	Milestone	Deliverables
1.	1 month	• Defining project goal and scope • Domain Knowledge • Research on tools and languages for implementation	Project Requirement and Feasibility Document
2.	Half month (1+0.5=1.5 months)	Implementation of design architecture that satisfies all requirements of project	Design Document
3.	2.5 months (1.5+2.5=4 months)	• Dataset collection for IDS • Coding and implementation	Compiled Code
4.	1 month (4+1=5 months)	Testing of IDS	Tested code
5.	1 month (5+1=6 months)	• Dataset collection and preprocessing for fraud detection • Coding and implementation	Complied Code for fraud detection
6.	Half month (6+0.5=6.5 months)	Testing of fraud detection system	Tested Code
7.	1 & half month (6.5+1.5=8 months)	Integration and UI design	Complete implementation
8.	1 month (8+1=9 months)	Documentation work	Complete framework

H. Final Deliverables of the Project:	(Please tick one of the following)	
□ Hardware Systems	☑ Software system	□ HW/SW integrated system
□ Software simulation results	□ Comparative study	□ Theoretical Design / Architecture
□ Simulator Design	□ Other Please Specify	

I. Please Specify Technical Details of Final Deliverables	

1. Machine learning/ deep learning algorithms for anomaly detection in network traffic and any fraudulent activity in online transaction.
2. Python will be used as a programming language for development of application.
3. Sniffer to extract and analyze payload and network packet header from transaction.
4. Extracted data will be saved in proper format using Amazon AWS, Relational Data System (RDS).
5. For fast training and deployment of ML model Amazon server Sage Maker will be used.

J. Equipment required for making prototype / working model	(Please indicate in tabular form the required equipments along with estimated costs)

S.No	Item Name	No of Units	Per Unit Cost(in Rs)	Total (in Rs)
1.	Website Domain	1	10,000	10,000
2.	Routers Setup	2	5000	10,000
3.	Server	1	30,000	30,000
4.	Cloud Database	1	20,000	20,000
	Grand Total			70,000

K. Benefits of the Project	(Please specify Direct / Indirect Beneficiaries)
This application will benefit users/organization by providing safe and secure channel for online transactions. Therefore, it will enable the user to analyze web traffic and detect any fraudulent activity in a single platform.	Organization of E-commerce websites

It is certified that the FYP titled " Multilayer Framework For Intrusion & Fraud Detection In Online Systems & Transactions (Lead-Security) " has been approved and is being undertaken by the above mentioned students as their Final Year Project.

It is undertaken that the undersigned has understood and accepted the "terms & conditions" of the program, attached with this form and further reiterate that, if the subject FYP is approved, the reimbursement of Funds claimed through Expenditure Report shall be in accordance with the "terms & conditions" of the Program and the undersigned will be liable to return the unutilized amount and other cost not approved by the Ignite-National Technology Fund, if any.

It is further undertaken that Expenditure Report of approved FYPs shall be furnished along with the supporting documents as devised in attached Terms and Conditions of the Program and other required deliverables as and when required by Ignite.

1. Name, Designation & Signature of Supervisor:_____

2. Name & Signatures of HOD: _____

L. For Office Use only:

(Please encircle the status of FYP)

Project Status	Approved	Not Approved
Evaluator's Name	_____	_____
Evaluator's Signatures	_____	_____