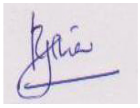
KALASALINGAM
ACADEMY OF RESEARCH AND EDUCATION
(DEEMED TO BE UNIVERSITY)
Under sec. 3 of UGC Act 1956. Accredited by NAAC with "A" Grade

Anand Nagar, Krishnankoil - 626126, Srivilliputtur (via), Virudhunagar District, Tamilnadu.

APPLICATION FOR ADMISSION TO Ph.D. PROGRAMMES

Date of Application:21-12-2020

Department	COMPUTER APPLICATIONS	Application No.	202020147
Area of Research	NETWORK INTRUDER DETECTION USING DEEP LEARNING	Research Mode	PART TIME



Name :RAJITHA P R

Date of Birth / Age :20-05-1982 / 38 Years

Gender :FEMALE

Category :OBC

e-Mail ID :rprreji@gmail.com

Mobile :9946635850

Father's/Husband's Name	D PRAKASHAN	**Father's/Husband's Occupation**	AGRICULTURE
Family Income	100000	**Residental Type**	RURAL
Birth Place	PARUTHIYARA	**Mother Tongue**	MALAYALAM
Religion	HINDU	**Martial Status**	MARRIED
Aadhaar No.	892352124899	**PAN No.**	BHUPR1185B
Physically Challenged	NO	**Type of Disability**	-

Address for Communication:	**Permenant Address:**
MUTTALUVILA VEEDU ODANAVATTOM P O KOTTARAKKARA KOLLAM DISTRICT KERALA INDIA Pin-691512	MUTTALUVILA VEEDU ODANAVATTOM P O KOTTARAKKARA KOLLAM DISTRICT KERALA INDIA Pin-691512

Qualification

Degree	Discipline	College/university	Year Passed	AVG/CGPA	Class	Mode
PG	MCA	KERALA	2005	89%	DISTINCTION	REGULAR
UG	COMPUTER SCIENCE	KERALA	2002	75%	FIRST CLASS	REGULAR

Experience

Organization	Designation	Experience From	Experience TO	Work Nature
KVVS INSTITUTE OF TECHNOLOGY, ADOOR	LECTURER IN COMPUTER APPLICATIONS	2006-08-25	2010-09-22	LECTURER
SREE NARAYANA INSTITUTE OF TECHNOLOGY, KOLLAM-10	ASST. PROFESSOR IN COMPUTER APPLICATIONS	2012-09-01	2020-12-21	ASST. PROF.

Payment Details

Transaction ID	Reference	Date of transaction	Amount	Status
202020147_201222191656	VSM29584742178	22-12-2020	600	SUCCESS

NETWORK INTRUDER DETECTION USING DEEP LEARNING

Introduction

In the modern era, Convolutional neural network (CNN) architectures in deep learning have achieved significant results in the field of computer vision. To transform this performance toward the task of intrusion detection (ID) in cyber security, this topic models network traffic as time-series, particularly transmission control protocol / internet protocol (TCP/IP) packets in a predefined time range with supervised learning methods such as multi-layer perceptron (MLP), CNN, CNN-recurrent neural network (CNN-RNN), CNN-long short-term memory (CNN-LSTM) and CNN-gated recurrent unit (GRU), using millions of known good and bad network connections. To measure the efficacy of these approaches we evaluate on the most important synthetic ID data set such as KDDCup 99. To select the optimal network architecture, comprehensive analysis of various MLP, CNN, CNN-RNN, CNN-LSTM and CNN-GRU with its topologies, network parameters and network structures is used. The models in each experiment are run up to 1000 epochs with learning rate in the range [0.01-05]. CNN and its variant architectures have significantly performed well in comparison to the classical machine learning classifiers. This is mainly due to the reason that CNN have capability to extract high level feature representations that represents the abstract form of low level feature sets of network traffic connections.

Recently, technology improvements have led to the faster information access over the internet. The ease of access of the data has also improved by the introduction of mobile computing platforms. The numbers of ecommerce companies are also increasing in the market. This has led to the increasing use of servers and sensitive information is transferred using the internet. This in turn has led to the increase in the threat from the attackers. Such cases increase the concern of developers and industry to develop measures to prevent such attacks. The attackers are using Virtual Private Networks (VPN) to mask the IP and MAC addresses during an attack on a network and thus keeping their identity hidden. Several types of network frauds have been carried out over the internet. Some of them include spams, website defacements , probing etc. A solution to this problem is to use the statistical parameters in the network to detect the intrusions caused. The suggested model would be controlling the traffic of network by curbing malicious efforts. It would seek for solving the issue of Spam, delay in response of server, illicit access to the network resources etc. This is applicable in many Intrusion Detection Systems (IDS) and Intrusion Prevention Systems (IPS) . A parameter that could be affecting the process of the IDS is noise. The noise affecting the system could raise false alarms as

attacks. In the present day traffic scenario, some of the real attacks may get miss classified under the class of false alarm, increasing the False Alarm Rat.

The two types of the IDS systems are:

- Signature based IDS (S-IDS)
- Anomaly based IDS (A-IDS)

S-IDS is based on predefined parameter sets collected from previous attacks. On the other hand A-IDS analyses the network traffic and interprets the intruder. This is the most prevalent method used in the industry as it is dynamic and can be programmed to learn from the new attacks on a regular basis. The signature based IDS is not capable of detecting severe attacks on the system. IDS would be providing the information about the source of the sender. But fake IP would be received in the case where the packet is encapsulated or Virtual Private Network (VPN) is utilized. This work would attempt for solving few of the above stated issues. The issue is to identify any malicious type of activity or attack on the network utilizing anomaly dependent statistical methods, & relevant features selection depending on the acquired outcomes. The selection of features would be playing an important role in the elimination of irrelevant and redundant attributes, so that it would be choosing the relevant attributes to build the model.

Existing system

Network intrusion detection systems (NIDS) are placed at a strategic point or points within the network to monitor traffic to and from all devices on the network. It performs an analysis of passing traffic on the entire subnet, and matches the traffic that is passed on the subnets to the library of known attacks. Once an attack is identified, or abnormal behaviour is sensed, the alert can be sent to the administrator. An example of an NIDS would be installing it on the subnet where firewalls are located in order to see if someone is trying to break into the firewall. Ideally one would scan all inbound and outbound traffic, however doing so might create a bottleneck that would impair the overall speed of the network. OPNET and NetSim are commonly used tools for simulating network intrusion detection systems. Waterfall for Intrusion Detection Systems (IDS) enables safe monitoring of OT networks. Waterfall for IDS unidirectional hardware emulates OT mirror & SPAN ports to network intrusion sensors on IT networks. With Waterfall for IDS in place, industrial enterprises can confidently host OT sensors on IT networks where the sensors are easily managed and updated by central SOC analysts, without risk to physical operations. Waterfall for IDS is a hardware-enforced, physical barrier that prevents remote attacks, malware, DOS attacks, ransomware and human errors originating on IT networks from compromising or impairing physical operations, while enabling seamless interoperability with intrusion detection system platforms.

But today, the intrusion detection schemes are rarely using deep learning techniques.

Proposed system

NIDS can be combined with other technologies to increase detection and prediction rates. Artificial Neural Network based IDS are capable of analysing huge volumes of data, in a smart way, due to the self-organizing structure that allows INS IDS to more efficiently recognize intrusion patterns. Neural networks assist IDS in predicting attacks by learning from mistakes; INN IDS help develop an early warning system, based on two layers. The first layer accepts single values, while the second layer takes the first's layers output as input; the cycle repeats and allows the system to automatically recognize new unforeseen patterns in the network.

Conclusion

An Intruder Detection System needs to detect anomalies in the network based on the input parameters.

SE - 16406/June'02

Register No. SE - 16244/July'02

284011

UNIVERSITY OF KERALA

FACULTY OF APPLIED SCIENCES

The Senate of the University of Kerala hereby makes known that Rajitha, P.B has been admitted to the Degree of Bachelor of Science, he / she having been certified by duly appointed Examiners to be qualified to receive the same and having been by them placed in the First Class in Branch Computer Science at the Examination held in the year July 2002

Given under the seal of the University.

University Buildings.

Thiruvananthapuram, January 16, 2003

Vice - Chancellor

Register No : 820

UNIVERSITY OF KERALA

FACULTY OF APPLIED SCIENCE

The Senate of the University of Kerala hereby makes known that **Rajitha, P.R.** has been admitted to the Degree of Master of Computer Applications, she having been certified by duly appointed Examiners to be qualified to receive the same, and having been by them placed in the **First Class with Distinction** at the Examination held in **September 2005**.

Given under the seal of the University

085504

University Buildings

Thiruvananthapuram **May 31, 2006**

Vice Chancellor

Electronic Certificate No.: 181052424

University Grants Commission
NATIONAL EDUCATIONAL TESTING BUREAU

NATIONAL ELIGIBILITY TEST FOR ASSISTANT PROFESSOR

UGC Ref. No: 52424/(NET-JULY 2018) Roll No: 37005475

Certified that RAJITHA P R

Son/Daughter of D PRAKASHAN

and G RADHA has qualified

the UGC-NET for eligibility for Assistant Professor held on 08-07-2018

in the Subject COMPUTER SCIENCE AND APPLICATIONS

As per the information provided by the candidate, he/she had completed his/her Master's degree or equivalent examination at the time of applying for NET.

The date of eligibility for Assistant Professor is the date of declaration of NET result, i.e., 31st July, 2018, OR the date of completion of Master's degree or equivalent examination with required percentage of Marks within two years from the date of declaration of NET result, i.e., by 30th July, 2020, whichever is later.

This is an electronic certificate only, its authenticity and category in which the candidate had appeared should be verified from UGC by the institution/appointing authority. This electronic certificate can also be verified by scanning QR Bar Code printed on the electronic certificate.

Validity of this electronic certificate is forever.

Date of Issue: 31-10-2018

Head
NET Bureau

Note: UGC has issued the electronic certificate on the basis of information provided by the candidate in his/her Application Form. The appointing authority should verify the original records/certificates of the candidate while considering him/her for appointment, as the Commission is not responsible for the same. The candidate must fulfil the minimum eligibility conditions for NET as laid down in the notification for UGC-NET.

Serial No. 49

UNIVERSITY OF KERALA

No. E E. IIA

Thiruvananthapuram

Register Number ..... 820 .....

Dated 11-0-NOV-2005 20

MEMORANDUM

The following marks were awarded to Shri. / Smt. Rajitha. P. R

at the Sixth Semester M C A. Degree Examination of September 2005

Subject	Marks awarded	Minimum marks required for a pass	Maximum marks
M C A 601 Project work Sessional	190		200
M C A 602 Project evaluation and Viva-voce Sessional	264		300
Total for VI Semester	454	250	500
Marks carried over from I to V Semesters	2668	1500	3000
Aggregate	3122	**1750**	**3500**
In words	Three, One, Two, Two		

Marks entered by .....

Marks checked by .....

Section Officer .....

Assistant Registrar .....

K.u.p. 189/2003-'04 100 x 5 bks.

Controller of Examinations

Joint Registrar
(Exmn.) in - charge of
Controller of Examinations

Book No. 9

UNIVERSITY OF KERALA

Serial No. 54

No. ES IV

Thiruvananthapuram,
Dated 18.9.2002.

MEMORANDUM

The following marks were awarded to Shri/Smt. _____ at the three Odd. Semesters of the B. Sc. Degree Examinations as detailed below.
Branch: COMPUTER SCIENCE

Semester & Subjects	Marks Secured	Maximum Marks
FIRST Reg. No.		
Technical Communication I		100
Mathematics I		100
Basic Electronics		100
Digital Electronics		100
Introduction to Computer Organisation		100
Electronics Laboratory		100
	467	600
THIRD Reg. No.		
Probability Theory & Statistics		100
System Analysis & Design		100
Business Data - Processing & COBOL		100
P. C. - Software II		100
Computer Oriented Numerical Methods		100
Computer Laboratory		100
	488	600
FIFTH Reg. No.		
Data base Management System		100
Software Management-Aids & Techniques		100
Computer Networks & Distributed Processing		100
Computer Graphics		100
Seminar / Mini Project		100
Computer Laboratory		100
	525	600

Pass Minimum 40% of Written and 50% of the total for each subject.

Marks entered by _____
Marks checked by _____
Section Officer _____
Assistant Registrar _____

K. U. P. 237/2002-'03 100 x 20 bks.

The following marks were awarded to Shri / Smt. Rajithan, P. R. at the Sixth Semester B.Sc. Degree Examinations of June 2002
Register Number 16406
Branch: COMPUTER SCIENCE

Subjects	Marks Secured	Minimum for a pass	Maximum marks
A. Operation Research — Written	60	30	75
Sessional	24	—	25
Total	84	50	100
B. System Simulation — Written	70	30	75
Sessional	24	—	25
Total	94	50	100
C. Introduction to Digital Signal Processing — Written	53	30	75
Sessional	23	—	25
Total	76	50	100
D. Project — External Assessment	76		100
Internal Assessment / Seminar & Viva-voce	180		200
Total	256		300
Grand Total	510	300	600
Carry Over Marks for **Second Semester**	422	300	600
Carry Over Marks for **Fourth Semester** 14244/July 02	426	300	600
Aggregate	1358		1500
Aggregate in words	one Three Five Eight		

Controller of Examinations

K. V. V. S. INSTITUTE OF TECHNOLOGY

KAITHAPARAMBU P. O., (VIA) ENATHU, ADOOR

KERALA Pin. 691 526

(Affiliated to the University of Kerala)

No. 17

Admission No 2208

TRANSFER CERTIFICATE

Name of Student	Rajitha P.R.
Date of birth as entered in the Admission Register (in figures & in words)	20.05.1982 Twentieth May Nineteen Eighty Two
Date of Admission	6.11.02
Date of Leaving	14.10.2005
Reason for leaving	Completed the course
Class in which the studient was studying at the time of leaving	III MCA
Subjects Studied	MCA
Whether qualified for promotion	Yes.
Name of Univeristy Examination for which the student was last presented with Register No. and year	University of Kerala. 820, Sept. '05.
Whether the student has appeared for the examination	Yes.
if yes, the parts and division in which the student passed/failed	Passed.
Whether the student has paid all fees and other money due	Yes.

Date 15.12.05

Section Clerk

PRINCIPAL
Principal College
K. V. V. S. Institute of Technology
Kaithaparambu, Adoor, Kerala.

K.V.V.S. INSTITUTE OF TECHNOLOGY

(Affiliated to University of Kerala and approved by AICTE)

Kaithaparambu,
(Via) Enathu, Adoor.
Kerala 691 526
India

Phone : +91-4734-244050
244947
E-mail : kvvsit@gmail.com
Fax : +91-4734-244050
http : //www.kvvsit.com

No: 09/MCA-KVVSIT/2010 Date: 22/09/2010

EXPERIENCE CERTIFICATE

This is to certify that Mrs. Rajitha.P.R has worked in this institution as a Lecturer in Computer Applications for MCA course with effect from 25/08/2006 to 22/09/2010. During this period, she has done her duties to the best of her abilities and to satisfaction. She is found to be punctual in her work, loyal to the job and of very pleasing personality. Her conduct and character are very good.

I wish this promising young lady every success.

PRINCIPAL
M. C. A. College
K. V. V. S. Institute of Technology
Kaithaparambu, Adoor, Kerala

K.V.V.S. INSTITUTE OF TECHNOLOGY
ADOOR-691526 KERALA INDIA

SREE NARAYANA INSTITUTE OF TECHNOLOGY

Approved by All India Council for Technical Education, New Delhi & Affiliated to University of Kerala

VADAKKEVILA P.O., KOLLAM - 691 010

Tel : 0474 - 2723154, 2723156. Fax : 0474 -2723156

Website: www.snit.ac.in e-mail:snitech@gmail.com

Managed by Sree Narayana Educational Society, Kollam

Dr. T. Mahalekshmi
Principal

Ref No:SNES/SNIT/2020-2021\ Date: 18 – 12 – 2020

EXPERIENCE CERTIFICATE

This is to certify that Rajitha P R., K H Cottage, Kedakulam, Varkala joined in Sree Narayana Institute of Technology, Kollam as Asst. Prof. in Computer Applications on 01/09/2012. She has a service of 8 years 3 months in this institution.

She is sincere and hardworking.

SREE NARAYANA INSTITUTE OF TECHNOLOGY KOLLAM-10

Principal
Principal
Sree Narayana
Institute of Technology
Vadakkevila P.O.
Kollam - 10

आयकर विभाग
INCOME TAX DEPARTMENT

भारत सरकार
GOVT. OF INDIA

RAJITHA P R

PRAKASAN

20/05/1982

Permanent Account Number

BHUPR1185B

Signature

In case this card is lost / found, kindly inform / return to :
Income Tax PAN Services Unit, UTIITSL
Plot No. 3, Sector 11, CBD Belapur,
Navi Mumbai - 400 614.

इस कार्ड के खोने/पाने पर कृपया सूचित करें/लौटाएं :
आयकर पैन सेवा यूनीट, UTIITSL
प्लाट नं: ३, सेक्टर ११, सी.बी.डी.बेलापूर,
नवी मुंबई-४०० ६१४.

Self attested by

20/12/2020

ഇൻഡ്യ തെരഞ്ഞെടുപ്പ് കമ്മിഷൻ
ELECTION COMMISSION OF INDIA
സമ്മതിദായക ഫോട്ടോ തിരിച്ചറിയൽ കാർഡ് - ELECTOR PHOTO IDENTITY CARD

LXC3077302

പേര് : രജിത

NAME : Rajitha

അച്ഛന്റെ പേര് : പ്രകാശൻ

FATHER'S NAME : Prakasan

ഭാരത നിർവാചൻ आयोग

Self attested for applying in Ph.D entrance, Kalasalingam University

ലിംഗം/ SEX : സ്ത്രീ / Female

ജനനത്തീയതി / വയസ്സ്
DATE OF BIRTH/AGE : 20/05/1982 / 32

മേൽവിലാസം : 12/333, മുട്ടലിവിളതാഴത്തിൽ, ഓടനാവട്ടം പി ഒ 691512

ADDRESS : 12/333, Muttaluvila Thazhathl, Odanavattom P.O 691512

ഇലക്ടറൽ രജിസ്ട്രേഷൻ ആഫീസർ
Date: 20/09/2015 ELECTORAL REGISTRATION OFFICER

അസംബ്ലി നിയോജകമണ്ഡലം നമ്പറും പേരും : 119, കൊട്ടാരക്കര

ASSEMBLY CONSTITUENCY No. & NAME : 119, KOTTARAKKARA

പാർട്ട് നമ്പർ : 138
PART No.

NOTE / കുറിപ്പ്

1. Mere possession of this card is no guarantee that you are elector in the current electoral roll. Please check your name in the current electoral roll before every election.

1. ഈ കാർഡ് കൈവശമുള്ളത് കൊണ്ട് മാത്രം നിങ്ങൾ നിലവിലുള്ള വോട്ടർ പട്ടികയിൽ ഒരു സമ്മതിദായകൻ ആകണമെന്നില്ല. ഓരോ തെരഞ്ഞെടുപ്പിനും മുമ്പായി നിലവിലുള്ള വോട്ടർ പട്ടികയിൽ നിങ്ങളുടെ പേര് ഉണ്ടോയെന്ന് പരിശോധിക്കേണ്ടതാണ്.

2. Date of Birth mentioned in this card shall not be treated as a proof of age/D.O.B. for any purpose other than registration in electoral roll.

2. ഈ കാർഡിൽ സൂചിപ്പിച്ച ജനനത്തീയതി വോട്ടർ പട്ടികയിൽ രജിസ്റ്റർ ചെയ്യുന്നതിനല്ലാതെ ജനനത്തീയതി/വയസ് തെളിയിക്കുന്നതിനുള്ള ഒരു രേഖയായി പരിഗണിക്കുവാൻ പാടില്ല.

0013 119 138 0486

2015009491015

No 1607/18

Village office: Veliyam
date : 5-1-2019

ANNEXURE II

Form of certificate to be produced by Other Backward Classes Applying for Appointment to posts under Government of Kerala and its organisations and Institutions

(G.O. (P) No. 81/2009/SCSTDD. Dated, Tvpm, 26th September, 2009, G.O. (P) No. 88/2010/SCSTDD. Dated, Tvpm, 8th August, 2010 & G.O. (P) No.5/2014/BCDD. Dated, Tvpm, 31st January, 2014)

This is to certify that Shri / Smt ...RAJITHA P.R... son / daughter of ...D. Prakashan, Muthaluvila Veedu, of ...Odanavattom p.o, Pasuthippara, Veliyam... Village ...Kollam... District / Division in the State of Kerala belongs to ...Hindu Ezhava... Community, which is designated as a Backward Class in the State of Kerala.

2. This is also to certify that the above Shri / Smt. ...RAJITHA. P.R... does not belong to the category of 'Creamy Layer' in the light of the guidelines dated ...(G.O.(P) No. 81/2009/SCSTDD. Dated Tvpm, 26th Sept. 2009)... and the schedule prescribed thereunder to identify the 'Creamy Layer' among the designated "Other Backward Classes" in the State of Kerala.

Date 5.1.19.

(Office Seal)

Issuing Authority

Signature

Name SUSEELA P

Designation Village Officer Veliyam

ANNEXURE-I

CERTIFICATE FROM THE ORGANISATION WHERE THE CANDIDATE IS EMPLOYED

Certified that ~~Mr./Ms.~~/Mrs. RAJITHA P.R. is employed as Assistant Professor. (Designation) in the Department of MCA. (Department/Division Name) of Sree Narayana Institute of Technology, Vadakkevila. (Institution/Industry Name).

We have no objection in forwarding his/her application for the Ph.D. Research Programme.

FOR FULL TIME:

The candidate will be sanctioned leave for the duration of the research programme and will be relieved from duty from _____ to _____ to undertake the full time research work in the University.

✓ FOR PART TIME:

The candidate will be permitted to undertake part time study in the University/College and will be allowed to be present for discussions with the supervisor, attending course works, conduct of experiments and participations in seminars and related presentations. Further the required facilities at our organization will also be provided to the candidate for doing research.

Date: 21/12/20

Signature of the Head of Organization with office seal

Principal
Sree Narayana
Institute of Technology
Vadakkevila P.O.
Kollam - 10

SREE NARAYANA INSTITUTE OF TECHNOLOGY
KOLLAM-10