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.	202020151
Area of Research	BIO-MEDICAL	Research Mode	PART TIME

Name :REDHYA M

Date of Birth / Age :21-12-2020 / 0 Years

Gender :FEMALE

Category :OBC

e-Mail ID :redhya2414@gmail.com

Mobile :9400591019

Father's/Husband's Name	S. K. RAJEEV	**Father's/Husband's Occupation**	ASSOCIATE PROFESSOR
Family Income	3,50,000/-	**Residental Type**	URBAN
Birth Place	KOLLAM	**Mother Tongue**	MALAYALAM
Religion	HINDU	**Martial Status**	MARRIED
Aadhaar No.	902002365129	**PAN No.**	BGIPM3070M
Physically Challenged	NO	**Type of Disability**	-

Address for Communication:
PRANAVAM, 51 - PRATHEEKSHA NAGAR
KILIKOLLOOR P.O.
KOLLAM
KOLLAM DISTRICT
KERALA
INDIA
Pin-691004

Permenant Address:
PRANAVAM, 51 - PRATHEEKSHA NAGAR
KILIKOLLOOR P.O.
KOLLAM
KOLLAM DISTRICT
KERALA
INDIA
Pin-691004

Qualification

Degree	Discipline	College/university	Year Passed	AVG/CGPA	Class	Mode
MCA	COMPUTER APPLICATIONS	KERALA	2007	77.74%	FIRST CLASS WITH DISTINCTION	REGULAR
B.SC.	MATHEMATICS	KERALA	2003	85.4%	FIRST CLASS	REGULAR

Experience

Organization	Designation	Experience From	Experience TO	Work Nature
SREE NARAYANA INSTITUTE OF TECHNOLOGY	ASSISSTANT PROFESSOR	2007-10-15	2020-12-21	TEACHING

Payment Details

Transaction ID	Reference	Date of transaction	Amount	Status
202020151_201221214736	VHMP9581717705	21-12-2020	600	SUCCESS

Brain tumor diagnosis with MRI, PET and CT using soft computing techniques

Brain tumor is referred to the aggregation of abnormal cells in some tissues of the brain or central spine canal. The term “tumor”, which literally means swelling, can be applied to any pathological process that produces a lump or mass in the body. Primary brain tumors and metastatic brain tumors form the two basic kinds of tumors. Primary brain tumors start and stay in the brain itself whereas metastatic brain tumors begin as cancer in different parts of the body and then spread to the brain. Tumors can be cancerous (or malignant) or non-cancerous (or benign). Malignant brain tumors grow fast and spread to other areas of the brain and spine and compared to benign tumors, they are more life-threatening.

The World Health Organization (WHO) classifies brain tumors by cell origin and behavior, from least to most aggressive. Many non-malignant brain tumors are classified as Grade I or II, also known as low grade (LG) tumors, and malignant tumors as Grade III or IV, as high grade (HG). While HG tumors are threatening with a maximum life expectancy of two years, LG tumors may allow the sufferer to have many years of life expectancy. A tumor which occurs in the brain or spinal cord is called as glioma and the tumor that arises from the meninges is called as meningioma. The abnormal cell growth in the pituitary gland is observed as pituitary tumor.

The American Cancer Society’s estimates for brain and spinal cord tumors in the United States for 2020 include both adults and children.

- About 23,890 malignant tumors of the brain or spinal cord (13,590 in males and 10,300 in females) will be diagnosed. These numbers would be much higher if benign (non-cancer) tumors were also included.
- About 18,020 people (10,190 males and 7,830 females) will die from brain and spinal cord tumors.

This cancer can drastically influence the quality of life, for both patients and their families. The key factor in treating brain tumor and increasing its survivability rate is early diagnosis and correctly determining its type. Since manual segmentation of brain tumors is a highly time-consuming, expensive and subjective task. Brain tumor segmentation is a critical step towards improving disease diagnosis, treatment planning, monitoring and clinical trials. Reliable brain

tumor segmentation is required to detect the location and also the extent of the tumor. However, brain tumors have properties that make their accurate segmentation challenging. These tumors are highly heterogeneous in terms of location, shape, texture and size. In addition, they are usually poorly contrasted and the intensity value of a tumor may overlap with the intensity value of healthy brain tissue. Therefore, it is not easy to distinguish healthy tissue from the tumor.

The early brain tumor detection plays a major role in treatment and recovery of the patient. For medical image diagnosis, the images can be obtained from various imaging modalities namely Positron Emission Tomography (PET), Magnetic Resonance Imaging (MRI) and Computed Tomography (CT). These imaging techniques differ in terms of effectiveness, price, type of physical phenomenon, the impact on the patient and its availability.

Among different screening technologies, Magnetic Resonance Imaging (MRI) is, typically, selected as the utilized technique for brain tumor classification, due to the high resolution images it can provide on brain tissue and MRI is harmless because it is based on magnetic field and radio waves and do not pose any radiation hazard to human body. Computer Aided (CAD) brain imaging programs have been developed to overcome the constraints of MRI such as needing significant time to acquire, process and interpret images. The proposed method consists of three phases including pre-processing, thresholding, and identification of region of interest (ROI).

Computed Tomography (CT) uses high dose x-ray radiation to generate the detailed scans or images of inside body. In most of the cases, CT machines generate continuous pictures in a helical (or spiral) fashion rather than producing a series of pictures of individual slices of the body. Helical CT has several advantages such as it is fast, it produces better 3-D images and it has better sensitivity in the detection of small abnormalities. The newest CT scanners, called multislice CT or multidetector CT scanners, allow more slices to be imaged in a shorter period of time.

In Positron Emission Tomography (PET) imaging system, a radioactive substance is injected into the blood to identify the most active body cells, especially the cancerous tissues. PET scan can be added with computed tomography (CT) so that both anatomical and functional views of the suspected cells can be observed. PET is useful in identifying axillary nodes and distant metastates. However, it has poor sensitivity in detecting small tumors because of their small size.

MRI has a higher sensitivity and PET/CT has a higher specificity in predicting the pathologic response in patients with brain tumor. PET/CT has some limitations compared with MRI. First, as a functional imaging technology, the anatomic discriminative resolution of PET/CT is lower than that of MRI. Second, the most appropriate pSUV cut-off value for predicting a pCR with PET/CT cannot be determined. The cost of PET/CT is higher, which could lead to a greater financial burden for patients.

CNN is one of the deep learning techniques for image recognition. Unlike conventional machine learning techniques, CNN trains itself using existing data without requirement of human-made feature values. Therefore, CNN has potential to discover unknown patterns of MRI, CT and PET that are associated with tumor hypoxia. Because localizing hypoxia is important for surgical resection and radiation therapy planning.

The aim is to develop an automated approach for the diagnosis of brain tumors using histopathological images which can be trained in convolutional neural network, for brain tumor image classification. To develop a model which can learn rich and discriminative features from the histopathological images and classifies different images obtained from MRI, PET and CT into benign and malignant classes with higher accuracy.

Redhya M.
Asst. Professor, MCA
Sree Narayana Institute of Technology,
Kollam, Kerala.

MCA

Register No : 518

UNIVERSITY OF KERALA

कर्मणि व्यज्यते प्रज्ञा

കേരള സർവകലാശാല

FACULTY OF APPLIED SCIENCE

The Senate of the University of Kerala hereby makes known that **Redhya, M.** *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 2007*** .

Given under the seal of the University

UNIVERSITY OF KERALA

कर्मणि व्यज्यते प्रज्ञा

University Buildings
Thiruvananthapuram ***June 26, 2008***

Vice Chancellor

BSc Mathematics

Register No : 4859/April 2003
4859/April 2004

UNIVERSITY OF KERALA

कर्मणि व्यज्यते प्रज्ञा
കേരള സർവകലാശാല

FACULTY OF SCIENCE

The Senate of the University of Kerala hereby makes known that **Redhya, M.** has been admitted to the Degree of Bachelor of Science, she having been certified by duly appointed examiners to be qualified to receive the same, and having been by them placed after passing the prescribed examinations, in the **Third** Class in Part I - English, in the **Second** Class in Part II - Second Language (**Hindi**) and in the **First** Class in Part III - Optional Subjects (**Mathematics** Main **Statistics** and **Physics** Subsidiaries) in **April 2003 , April 2003 and April 2004** respectively.

Given under the seal of the University

035457

University Buildings
Thiruvananthapuram **February 14, 2005**

Vice Chancellor

MCA

Book No. 5

UNIVERSITY OF KERALA

Serial No. 78

No. EE. II A

Register Number 518

Thiruvananthapuram,

Dated 15 OCT 2007

MEMORANDUM

The following marks were awarded to Shri/Smt. Redhya. M

at the Sixth Semester M. C. A. Degree Examination of September 2007

Subject	Marks Awarded	Minimum Marks required for a pass	Maximum Marks
M. C. A. 601 Project work — Sessional	174		200
M. C. A. 602 Project evaluation and Viva-Voce — Sessional	217		300
Total for VI Semester	391	250	500
Marks carried over from I to V Semesters	2330	1500	3000
Aggregate	2721	**1750**	**3500**
In words	Two Seven Two One		

Marks entered by Sheeba

Marks checked by

Section Officer

Sulekha. CO. I

CONTROLLER OF EXAMINATIONS

K. U. P. 559/2005-'06 100 x 8 Bks.

BSc Mathematics

UNIVERSITY OF KERALA

Book No. 42 Serial No. 59

No. E. D. I (a)

Thiruvananthapuram

Dated 19 MAY 2004 200 .

MEMORANDUM

The following marks were awarded to Shri / Smt. Redhya. M.

at the Final Year B. Sc. Degree Examination of April / ~~October~~ 2004.

Register Number 4859

Subjects	Marks awarded	In words	Minimum for a pass	Maximum Marks
PART III — OPTIONAL SUBJECTS				
(a) Mathematics—Main				
Written Examination	436			530/520
Internal Assessment	80			70/80
Total for Main	516	Five, One, Six	210	600
(b) **Subsidiary Subjects**				
1. Statistics	173	One, Seven, Three	70	200
2. Physics	165	One, Six, Five	70	200
Total for Part III	854	Eight, Five, Four	350	1000

Prepared by—

Marks checked by—Suseela

Section Officer—

CONTROLLER OF EXAMINATIONS

K. U. P. 228 / 2000-'01 100x 50 bks.

K. V. V. S. INSTITUTE OF TECHNOLOGY

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

KERALA Pin. 691 526

(Affiliated to the University of Kerala)

No. 52

Admission No 2414

TRANSFER CERTIFICATE

Name of Student	Redhya M.
Date of birth as entered in the Admission Register (in figures & in words)	27.02.1984, Twenty Seventh February Nineteen Eighty four
Date of Admission	4.10.2004
Date of Leaving	11.10.2007
Reason for leaving	Passed MCA.
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	Uty. of Kerala. 518, Sept. 2007
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 11.10.07

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

Principal

Section Clerk

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

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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: 17 – 12 – 2020

EXPERIENCE CERTIFICATE

This is to certify that Redhya M., Pranavam, Kilikolloor P.O., Kollam joined in Sree Narayana Institute of Technology, Kollam as Lecturer in Computer Applications on 15/10/2007. She was redesignated as Assisstant Professor with effect from 01/02/2012. She has put in a total service of 13 years 2 months in this institution.

She is sincere and hardworking.

Principal

SREE NARAYANA INSTITUTE OF TECHNOLOGY KOLLAM-10

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

आयकर विभाग

INCOME TAX DEPARTMENT

भारत सरकार

GOVT. OF INDIA

REDHYA MOHANAN

MOHANAN NARAYANAN

27/02/1984

Permanent Account Number

BGIPM3070M

Signature

28062010

Self attested to apply
for Ph.D. at KARE

G/9001/03

Name to be written across the photograph

(Part of the seal and signature of the Licensing Authority to be on the photograph and part on the driving licence).

FORM 6

[*See* rule 16 (1)]

Driving Licence

Name of the Licence Holder.....
REDHYA. M.

Son/wife/daughter of.....
Mohanan.

Specimen signature/Thumb impression of the holder of the licence

EVUGIN JOSEPH. T. J.
Motor Vehicles Inspector
R. T. Office, Kollam-13.

Signature and designation of the Licensing Officer

38/553/2003/DTP

4

Driving licence number G/9001/03.
Date of issue 28.11.03.
Name Redhya.M.
Son/wife/daughter of
Mohanan.
Temporary address/Official address (if any)
Pranavam.
Permanent address
Kilikollur, Kollam
Date of birth 27/2/1984
Educational qualifications
Blood group with RH factor

5

The holder of this licence is licensed to drive throughout India vehicles of the following description:—

Motor cycle without gear

Motor cycle with gear

Invalid carriage

Light motor vehicle

Medium goods vehicle

Medium passenger motor vehicle

Heavy goods vehicle

Heavy passenger motor vehicle

A motor vehicle of the following description: LMV

Self attested to apply for PhD at KARE

ANNEXURE-I

CERTIFICATE FROM THE ORGANISATION WHERE THE CANDIDATE IS EMPLOYED

Certified that Mr./Ms./Mrs. Redhya M. is employed as (Designation) Asst. Professor in the (Department/Division Name) MCA of (Institution/Industry Name) Sree Narayana Institute of Technology, Kollam, Kerala.

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 : 17-12-2020

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