



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

APPLICATION FOR ADMISSION TO Ph.D. PROGRAMMES

Date of Application:16-06-2020

Department	ELECTRONICS AND COMMUNICATION ENGINEERING	Application No.	20200087
Area of Research	BIO-MEDICAL IMAGE PROCESSING	Research Mode	PART TIME

Name :ANJU IQUBAL
Date of Birth / Age :21-05-1983 / 37 Years
Gender :FEMALE
Category :OBC
e-Mail ID :mail2anjushiyaz@gmail.com
Mobile :9349963888



Father's/Husband's Name	NUJUM SHIYAZ T	Father's/Husband's Occupation	TELECOM MANAGER
Family Income	400000	Residential Type	URBAN
Birth Place	KOTTAYAM	Mother Tongue	MALAYALAM
Religion	MUSLIM	Martial Status	MARRIED
Aadhaar No.	887132111127	PAN No.	AAVPI3082R
Physically Challenged	NO	Type of Disability	-

Address for Communication:
 THOTTATHIL, NO.2, ROYAL NAGAR
 KILIKOLLOOR
 KOLLAM
 KOLLAM DISTRICT
 KERALA
 INDIA
 Pin-691004

Permenant Address:
 THOTTATHIL, NO.2, ROYAL NAGAR
 KILIKOLLOOR
 KOLLAM
 KOLLAM DISTRICT
 KERALA
 INDIA
 Pin-691004

Qualification						
Degree	Discipline	College/university	Year Passed	AVG/CGPA	Class	Mode
B.TECH	ELECTRONICS AND COMMUNICATION ENGINEERING	COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY	2004	73.71	FIRST	REGULAR
M.TECH	INDUSTRIAL INSTRUMENTATION AND CONTROL	KERALA UNIVERSITY	2011	7.8	FIRST	REGULAR

Experience					
Organization	Designation	Experience From	Experience TO	Work Nature	
YOUNUS COLLEGE OF ENGINEERING AND TECHNOLOGY, KOLLAM	ASSOCIATE PROFESSOR	2006-10-08	2020-06-16	TEACHING	
MANGALAM COLLEGE OF ENGINEERING, ETTUMANNOOR	LECTURER	2004-07-20	2004-12-22		
MES COLLEGE OF ENGINEERING, KUTTIPURAM	LECTURER	2005-01-05	2006-05-31		

Payment Details				
Transaction ID	Reference	Date of transaction	Amount	Status
20200087_200624165959	SHMP8928551552	24-06-2020	600	SUCCESS

RESEARCH PROPOSAL

Breast cancer is one of the most common cancers in women. Typically, the course of the disease is asymptomatic in the early stages of breast cancer. According to World Health Organization (WHO), it is estimated that 6,27,000 females died of breast cancer in 2018 which is roughly 15% women around the world and the rates are rapidly growing worldwide. Breast cancer accounts for 14% of cancers in Indian women. It is reported that with every four minutes, an Indian woman is diagnosed with breast cancer. Breast cancer is on the rise, both in rural and urban India. A 2018 report of Breast Cancer statistics recorded 1,62,468 new registered cases and 87,090 reported deaths. Cancer survival becomes more difficult in higher stages of its growth, and more than 50% of Indian women suffer from stage 3 and 4 of breast cancer. Post cancer survival for women with breast cancer was reported 60% for Indian women, as compared to 80% in the U.S.

One in twenty-eight Indian women is likely to develop breast cancer during her lifetime. It is more (1 in 22) for urban women than the rural group (1 in 60). A report stated that cancer caused 5% of the total disability-adjusted life years (DALYs) in the Indian population in 2016. The numbers are staggering and constantly rising. The Indian Council for Medical Research published a report which stated that in 2016 the total number of new cancer cases is expected to be about 14.5 lakhs. This figure will likely increase to 17.3 lakhs in 2020.

Under this circumstances, early detection of breast tumor is essential to considerably decrease the mortality rates of female due to the fact that “according to a statistical report it was found that survival rate of breast tumor patients is almost 96% over five years because their tumors were identified at the early stage”. The diagnosis of breast cancer can be done using imaging tests and biopsy. Mammography (MM), ultrasound imaging (US), positron emission tomography (PET), computed tomography (CT), and magnetic resonance imaging (MRI) are considered the most commonly used imaging modalities to diagnose the breast cancer. These imaging techniques differ in terms of effectiveness, price, type of physical phenomenon, the impact on the patient and its availability.

Among these modalities, mammography is considered as the standard breast tumor screening technique. Although it is a conventional screening method, mammography has less efficacy for patients under the age of 40 and dense breasts, less sensitivity to tiny tumors as well as does not indicate any possible outcome of the disease. Ultrasound is considered as an additional screening tool with only a small contribution to early cancer detection in conjunction with MRI and mammographically dense breast in women. On the other hand, Magnetic resonance imaging (MRI) is capable of detecting minor lesions that mammography and ultrasound cannot detect. By different studies, contrast-enhanced breast MRI has been established as a screening modality for women with familial risk for breast cancer growth. It demonstrates elevated sensitivity as twice as mammography and specificity around 97%, with the same range of positive predictive values for biopsy compared to mammography. There are numerous studies carried out using MRI images to identify breast tumor. Computer Aided (CAD) breast 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 not restricted to breast density and is useful in identifying axillary nodes and distant metastases. However, it has poor sensitivity in detecting small tumors because of their small size.

An important role in breast lesion segmentation is played by contour-based methods. This is especially true in case of the so-called active contours, i.e. dynamic curves moving towards the lesion boundary. There are various types of active contours: geodesic magnetostatic level sets etc. These methods are particularly effective in the case of a significant gradient at the boundaries of the lesion.

MRI has a higher sensitivity and PET/CT has a higher specificity in predicting the pathologic response in patients with breast cancer. 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 breast cancer tumors using histopathological images which can be trained in convolutional neural network, for breast cancer 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.

ANJU IQUBAL
Associate Professor
YCET, Kollam

Register No. 10310683 MAY 2004



0005517

Cochin University of Science and Technology



FACULTY OF ENGINEERING

The *Academic Council* of the Cochin University of Science and Technology hereby makes known that

Anju Igubal

has been awarded the

DEGREE OF BACHELOR OF TECHNOLOGY

in *Electronics and Communication Engineering*

he/she having undergone the prescribed course of study and having been certified by duly appointed examiners to be qualified to receive it and placed by them in the

First Class

at the Examination held in *May, 2004*

Given under the Seal of the University

University Buildings,

Kochi - 682 022.

Dated 13-01-2005



Vice-Chancellor.

Sl.No: 0003484



FACULTY OF ENGINEERING AND TECHNOLOGY

The Senate of the University of Kerala hereby makes known that **Anju Iqubal** has been admitted to the Degree of Master of Technology, 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** at the Examination held in **October 2011**, her subject of specialisation being Branch **Electrical and Electronics Engineering**.

Elective Industrial Instrumentation and Control.

Given under the seal of the University

University Buildings
Thiruvananthapuram July 06, 2012




Vice Chancellor

Cochin University of Science and Technology

KOCHI - 682 022, INDIA



Serial No. : 01264

Dated : 27/07/2004

Section : **FK**

MEMORANDUM

The following is the statement of marks awarded to **ANJU IQUBAL**
at the **B.Tech Degree VIII (FINAL) SEMESTER EXAMINATION MAY 2004**
Branch : **ELECTRONICS & COMMUNICATION ENGINEERING**

REGISTER NUMBER : 10310683

Sub Code	SUBJECT	University		Internal		Total	
		Awarded	Max.	Awarded	Max.	Awarded	Max.
EC801	AUDIO AND VIDEO SYSTEMS	045	100	045	050	090	150
EC802	VLSI SYSTEM DESIGN	081	100	044	050	125	150
EC803	COMPUTER NETWORKS	060	100	040	050	100	150
EC804	MODERN COMMUNICATION SYSTEMS	060	100	043	050	103	150
EC805	BIOMEDICAL INSTRUMENTATION	074	100	047	050	121	150
EC806	PROJECT WORK	---	---	131	150	131	150
EC807	VIVA - VOCE	077	100	---	---	077	100
Result	PASSED	Total for the Eighth Semester				0747	1000

CONSOLIDATION

Semester	Marks Secured	Maximum Marks
Total of I & II Semester	1175	1700
III Semester	785	1050
IV Semester	776	1050
V Semester	744	1050
VI Semester	807	1050
VII Semester	863	1100
VIII Semester	747	1000
Grand Total	5897	8000

PASS MINIMUM FOR UNIVERSITY EXAMINATIONS - 801 TO 805 : 45% & PASS MINIMUM (TOTAL) FOR SUBJECTS 801 TO 807 : 50%

The candidate has successfully completed all semesters and is eligible for the award of B.Tech Degree.



[Signature]
Controller of Examinations

80 12 4 Mo

UNIVERSITY OF KERALA

Book No. **4**

Serial No. **3**

EE II A



Thiruvananthapuram,

Register No. 1003

Dated... 2 / MAY / 2012

M. Tech. GRADE CARD

Name of Candidate : Anju Iqbal

Name of Examination : Final M. Tech. Degree

Month and Year of Examination : October 2011

Branch : Electrical and Electronics Engineering

Specialisation : Industrial Instrumentation and Control

Course Code	Name of Subjects	Credit (Ci)	Grade
	Thesis and Viva-Voce	12	B

SGPA : 8.33

CGPA : 7.84

Whole Pass Minimum : CGPA \geq 6

Prepared by : [Signature]

Compared by : [Signature]

Section Officer : [Signature]

[Signature]
CONTROLLER OF EXAMINATIONS



COLLEGE OF ENGINEERING KIDANGOOR

(Under the Co-Operative Academy of Professional Education, Estd. by Govt. of Kerala)

KIDANGOOR SOUTH P.O, KOTTAYAM-686 583 (Ph) 04822-255056 / 257656 / 256456

Fax : 04822-257656 Email : cekcape@sancharnet.in

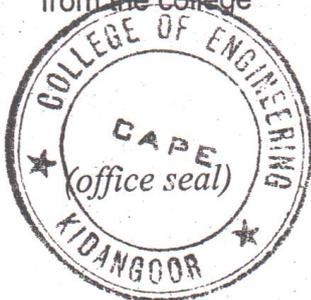
Website : www.cekgr.org

No 48

Date. 10/8/04.....

TRANSFER CERTIFICATE

1. Name of Student : ANJU IQUBAL
2. Date of birth
(in figure and words) : 21.5.1983
3. Caste and Religion : ISLAM, MUSLIM
4. Admission No. : 00RC 074
5. Date of Admission : 13.11.2000
6. Class to which admitted : B.Tech (1st year)
7. Date of leaving : 10/8/04
8. Class from which relieved : S & EC
9. Branch of study : ELECTRONICS AND COMMUNICATION
ENGINEERING.
10. Whether qualified for promotion
to a higher class : YES
11. Whether all fees and
dues have been paid : YES
12. whether the student was
in receipt of fee concession : NO
13. Reason for leaving : COURSE COMPLETED
14. Name of the University
Examination for which the
candidate was last presented
from the college : COCHIN UNIVERSITY OF SCIENCE AND
TECHNOLOGY.




PRINCIPAL



YUNUS COLLEGE OF ENGINEERING & TECHNOLOGY

VADAKKEVILA P.O., KOLLAM - 691 010, PHONE : OFF : 0474 - 2724305, 2723292, FAX : 0474 - 2726055

E-mail : info@ycet.ac.in, infoycet@gmail.com

(Approved by A.I.C.T.E, Affiliated to APJ Abdul Kalam Technological University)

NO. 11/Estt/YCET/ 2020

23RD JUNE, 2020.

EXPERIENCE CERTIFICATE

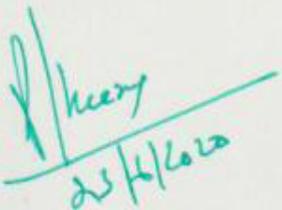
This is to certify that Ms. Anju Iqbal residing at Thottathil, Royal Nagar No.2, Kilikolloor P.O, Kollam -691004, has been working in this college from 08.10.2006 onwards. She is currently working as **Associate Professor** in the Dept. of Electronics & Communication Engineering.

She is efficient, honest, sincere and hardworking.

Her conduct and character are excellent.

This certificate is issued on her request.




23/6/20

Dr. P. SREERAJ
PRINCIPAL
Yunus College of Engineering
& Technology
Kollam-691 010

MES COLLEGE OF ENGINEERING, KUTTIPPURAM



Thrikkanapuram P.O., Malappuram District, Kerala State, Pin - 679 573
Phone : 0494-2698081 / 2698987 / 2699127 Fax : 0494-2698081
E-mail : info@mesengg.com, mesprinci@yahoo.com Website : www.mesengg.com
(AN ISO 9001 : 2000 Certified Institution & Accredited by National Board of Accreditation)
Approved by AICTE/Affiliated to Calicut University
(RUN BY THE MUSLIM EDUCATIONAL SOCIETY, CALICUT)



No.EC/B1/2013/2006

30-06-2006

EXPERIENCE CERTIFICATE

Certified that Ms. Anju Iqbal has been working as Lecturer in Electronics and Communication Engineering Department of this College since 14-03-2005 and was placed in the grade of Rs.8000-275-13500. She has been relieved of her duties in the College from 30-06-2006 A.N. on her request.

Her conduct and character during the period of her service in the College are good.

I wish her all success.



Dr. K.P. Mohammed

Dr. K.P. Mohammed
Principal

PRINCIPAL
MES COLLEGE OF ENGINEERING
KUTTIPPURAM
THRIKKANAPURAM(P.O.), MALAPPURAM Dt.
KERALA, PIN: 679573

MANGALAM COLLEGE OF ENGINEERING

VETTIMUKAL P.O. MANGALAM HILLS, ETTUMANOOR, KOTTAYAM - 686 631, KERALA
Tel. +91-481-2537053, 2533711, 2533722, 2533733, 2533744, 3093221 . FAX +91-481-2563508
e-mail mimce@mangalam.com www.mangalam.net

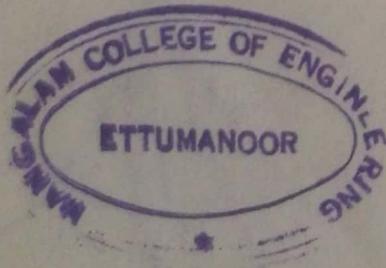


24.02.05

EXPERIENCE CERTIFICATE

This is to certify that Miss. Anju Iqbal is working as a lecturer in Electronics & Communication Engineering Dept., in **Mangalam College of Engineering**, Ettumanoor, since July 2004 onwards.

Her character and conduct are good.



Principal

PROF. N. Hanthara Subramanyam
Principal

आयकर विभाग

INCOME TAX DEPARTMENT



सत्यमेव जयते

भारत सरकार

GOVT. OF INDIA

ANJU SHIAZ

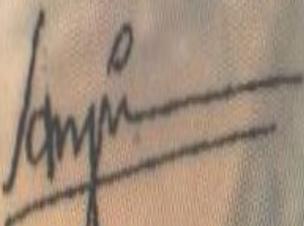
RAWTHER IQUBAL

21/05/1983

Permanent Account Number

AAVPI3082R




Signature



ഇൻഡ്യ തിരഞ്ഞെടുപ്പ് കമ്മീഷൻ

ELECTION COMMISSION OF INDIA



സമ്മതിഭാതക ഫോട്ടോ തിരിച്ചറിയൽ കാർഡ് - ELECTOR PHOTO IDENTITY CARD



FPD1283985



പേര്

: അനജു ഇക്ബാൽ

NAME

Anju Iqubal

ഭർത്താവിന്റെ

: നജൂം ഷിയാസ്

പേര്

HUSBAND'S

: Nujum Shiyaz

NAME

भारत निर्वाचन आयोग

ലിംഗം/ SEX : സ്ത്രീ / Female

ജനനത്തീയതി / വയസ്സ്

DATE OF BIRTH/AGE : 21/05/1983 / 31

മേൽവിലാസം : 1310/1310, തോട്ടത്തിൽ, കിളികൊല്ലൂർ
പി ഒ, കൊല്ലം, 691004

ADDRESS : 1310/1310, Thottathil, Kilikolloor P
O, Kollam, 691004

ഇലക്ടറൽ രജിസ്ട്രേഷൻ ഓഫീസർ

Date: 26/12/2014 ELECTORAL REGISTRATION OFFICER

അസംബ്ലി നിയോജകമണ്ഡലം : 125, ഇരവിപുരം
നമ്പരും പേരും

ASSEMBLY CONSTITUENCY No. : 125, ERAVIPURAM
& NAME

പാർട്ടി നമ്പർ : 12

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 തിരഞ്ഞെടുപ്പിനും 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 തിരിച്ചറിയുന്നതിനുള്ള ഒരു രേഖയായി പരിഗണിക്കുവാൻ പാടില്ല.

No.

NO: 378/16

Village Officer,

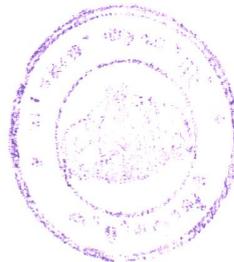
Date.. 2. 2. 16

ANNEXURE -II

CERTIFICATE TO BE PRODUCED BY OTHER BACKWARD CLASSES
APPLYING FOR APPOINTMENT TO POSTS UNDER THE GOVERNMENT
OF KERALA AND ITS ORGANISATION AND INSTITUTIONS.

This is to certify that Shri/Smt./Kum/ ANJU IQUBAL Daughter/
Son of A.M. Mahammed Iqbal Thottathilveedu No. 2
Royal Nagar Kilikolloor of Village Kollam
District/ Division in the State of KERALA Belongs to Islam, Muslim
Community which is designated as a backward class in the State of Kerala

This also to certify that the above Shri/ Smt/Kum ANJU IQUBAL does not be-
long to the category of "Creamy Layer" in the light of the guidelines issued in G.O.(P) No.
81/2009 SC/ST/DD, dated 26.09.2009 and the scheduled prescribed there under to identify
"Creamy Layer" among the designation "Other Backward Classes" in the State of Kerala.



Village Officer
R. SURESH BABU
VILLAGE OFFICER
KILIKOLLOOR

ANNEXURE-I

CERTIFICATE FROM THE ORGANISATION WHERE THE CANDIDATE IS EMPLOYED

Certified that Mr./Ms./Mrs. ANJU TQUBAL is employed as ASSOCIATE PROFESSOR (Designation) in the ELECTRONICS AND COMMUNICATION ENGINEERING (Department/Division Name) of YOUNUS COLLEGE OF ENGINEERING AND TECHNOLOGY, KOLLAM (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: 22.06.2020

Signature of the Head of Organization with office seal

A. Theerap
22/6/2020
PRINCIPAL
Younus College of Engineering
Technology
Kollam - 691 010
YOUNUS COLLEGE OF ENGINEERING
VADAKKEYILA
KOLLAM-10