



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

**APPLICATION FOR ADMISSION TO Ph.D. PROGRAMMES**

Date of Application:30-12-2020

|                  |   |                 |           |
|------------------|---|-----------------|-----------|
| Department       | ELECTRONICS AND COMMUNICATION ENGINEERING | Application No. | 202020225 |
| Area of Research | IMAGE PROCESSING                          | Research Mode   | PART TIME |

**Name** :DIVYA V CHANDRAN  
**Date of Birth / Age** :12-05-1988 / 32 Years  
**Gender** :FEMALE  
**Category** :OC  
**e-Mail ID** :divyavchandran@gmail.com  
**Mobile** :9809639849



|   |               |   |   |
|---|---------------|---|---|
| <b>Father's/Husband's Name</b>  | P K CHANDRAN  | <b>Father's/Husband's Occupation</b>  | (RETIRED) DISTRICT PROGRAMME OFFICER, EDUCATION DEPARTMENT , KERALA |
| <b>Family Income</b>  | APPROX. 4.8L  | <b>Residential Type</b>   | RURAL   |
| <b>Birth Place</b>  | POOVATHUSSERY | <b>Mother Tongue</b>  | MALAYALAM   |
| <b>Religion</b>   | HINDU         | <b>Martial Status</b>   | MARRIED   |
| <b>Aadhaar No.</b>  | 640525652703  | <b>PAN No.</b>  | ASLPC7409G  |
| <b>Physically Challenged</b>  | NO            | <b>Type of Disability</b>   | -   |
| <b>Address for Communication:</b><br>SREENILAYAM (H)<br>ATHANI P.O<br>ANGAMALY<br>ERNAKULAM DISTRICT<br>KERALA<br>INDIA<br>Pin-683585 |               | <b>Permenant Address:</b><br>SREENILAYAM (H)<br>ATHANI P.O<br>ANGAMALY<br>ERNAKULAM DISTRICT<br>KERALA<br>INDIA<br>Pin-683585 |   |

| Qualification |   |                    |             |          |                              |         |
|---------------|---|--------------------|-------------|----------|------------------------------|---------|
| Degree        | Discipline                              | College/university | Year Passed | AVG/CGPA | Class                        | Mode    |
| MTECH         | REMOTE SENSING                          | ANNA UNIVERSITY    | 2011        | 9.028    | FIRST CLASS WITH DISTINCTION | REGULAR |
| BTECH         | ELECTRONICS & COMMUNICATION ENGINEERING | CALICUT UNIVERSITY | 2009        | 76.036   | FIRST CLASS WITH HONOURS     | REGULAR |

| Experience  |                     |                 |               |             |  |
|---|---------------------|-----------------|---------------|-------------|--|
| Organization  | Designation         | Experience From | Experience TO | Work Nature |  |
| ADI SHANKARA INSTITUTE OF ENGINEERING & TECHNOLOGY, KALADY , KERALA | ASSISTANT PROFESSOR | 2011-01-05      | 2020-12-30    | TEACHING    |  |

| Payment Details |
|-----------------|
|-----------------|

| Transaction ID         | Reference      | Date of transaction | Amount | Status  |
|------------------------|----------------|---------------------|--------|---------|
| 202020225_201230221259 | VHMP9610565303 | 30-12-2020          | 600    | SUCCESS |

# **Hyperspectral Image Classification**

## **Abstract:**

Research on image classification has become a big challenging issue for the remote sensing community. With a rapid growth of remote sensing technology and increasing number of satellites, the availability of hyperspectral images (HSI) is growing exponentially. High spectral dimensionality of HSI makes them useful data inputs for many remote sensing applications; environmental, military, mining and medical fields. Image spectrometers are installed to capture the HSI, which can image in many continuous and very narrow bands. HSI images have high spectral resolution and it contains many information which leads to the need for highly accurate processing methods for hyperspectral images. The processing methods of hyperspectral remote sensing images mainly include image correction, noise reduction, transformation, dimensionality reduction, and classification.

## **Objectives:**

- To identify the different methods for hyperspectral image classification.
- To arrive at an optimal algorithm for HSI classification.
- To find the best performing classifier after combining the spatial and spectral information.

## **Problem Definition:**

- 1) The high dimensionality of hyperspectral images may lead to the spectral information dimension up to hundreds of dimensions.
- 2) Affected by factors such as atmospheric conditions, sensors, composition and distribution of ground features, and surrounding environment, the spectral information of hyperspectral images changes in the spatial dimension, resulting in that the ground feature corresponding to each pixel are not single.
- 3) During the acquisition of hyperspectral images, the interference of noise and background factors seriously affects the quality of the collected data. The image quality directly affects the classification accuracy of hyperspectral images.

## **Literature survey:**

Hyperspectral image classification methods are classified into supervised classification, unsupervised classification, and semi supervised classification.

In supervised classification, based on the known sample category and prior knowledge, we have to determine the discriminant criteria to calculate the discriminant function. Commonly used supervised classification methods include support vector machine method, artificial neural network classification method, decision tree classification method, and maximum likelihood classification method. The unsupervised classification method, without any prior knowledge, the classification is done based on the spectral similarity of the hyperspectral data, that is, the clustering method. Since no prior knowledge is used, unsupervised classification can only assume initial parameters, form clusters through pre classification processing, and then iterate to make the relevant parameters reach the allowable range. The main disadvantage

of the supervised method is that the classification model and classification accuracy mainly depend on the number of training data sets of label points, and obtaining a large number of hyperspectral image class labels is a time-consuming and cost-intensive task. Although unsupervised methods are not sensitive to labelled samples, due to the lack of prior knowledge, the relationship between clustering categories and real categories is uncertain. Semi Supervised classification uses both labelled and unlabelled data to train the classifier. It makes up for the lack of unsupervised and supervised learning. This classification method is based on the same type of labelled and unlabelled samples on the feature space [1]

To reduce the HSI challenges, different dimensionality methods were proposed to transform the HSI from the original space into a low-dimensional space in which the new feature space has less redundant information.[6]. For extracting the spatial features and to improve the spatial resolution by reducing the high dimensionality by Principal Component Analysis (PCA) and computing the profiles on the first principal components, leading to the definition of extended MPs (EMPs) (Morphological Profiles). But there are many limitations while performing PCA leads to Independent Component Analysis (ICA) before the computation of the MPs [6]

Another classification is based on the deep learning method which requires a large number of training samples for classification, and the training time is long. If there are enough training samples, the deep learning method is a good choice. If sufficient labelled samples are provided, then the deep learning classifiers will give best performance for hyperspectral image classification. But if there are not many sufficient data samples available, it may fail. But active learning endows deep learning classifiers with the ability to alleviate this deficiency. However, existing active deep learning methods tend to underestimate the feature variability of hyperspectral images when querying informative unlabelled samples subject to certain acquisition heuristics. To address this limitation, we developed a feature-oriented adversarial active learning (FAAL) strategy, which exploits the high-level features from one intermediate layer of a deep learning classifier for establishing an acquisition heuristic based on a generative adversarial network (GAN).[2]

Spectral–spatial method is the other classification technique for classification of hyperspectral images (HSIs) by modifying traditional Auto-Encoder based on Majorization Minimization (MM) technique. In this, firstly construct weights of Auto-Encoder, similarity angle map (SAM) criterion is used as regularization term. It is useful to extract spectral similarity of initial features. Then to enhance the classification accuracy, fuzzy mode is used to estimate parameters. These modifications lead to create an extended Auto-Encoder based on MM (EAEMM). Also, to improve the performance of Auto-Encoder, multi-scale features (MSF) are extracted. Among these, MSF-EAEMM shows that the classification accuracy can be improved a lot.[6]

Another major challenge in remote sensing images is its inherent large scale and complex structures which leads to the difficulties such as spatial object distribution diversity and spectral information extraction when existing models are directly applied for image classification. A new system developed an attention-based pyramid network for segmentation and classification of remote sensing datasets. Attention mechanisms are used to develop (i) a novel and robust attention-based multi-scale fusion method effectively fuses useful spatial or spectral information at different and same scales; (ii) a region pyramid attention mechanism using region-based attention addresses the target geometric size diversity in large-scale remote

sensing images; and (iii) cross-scale attention in our adaptive atrous spatial pyramid pooling network adapts to varied contents in a feature-embedded space.[3]

The neural network-based hyperspectral images (HSI) classification model also has a deep structure, which leads to the increase of training parameters, long training time, and excessive computational cost. The deepened network models are likely to cause the problem of gradient disappearance, which limits further improvement for its classification accuracy.[4]

## **References**

1. Wenjing Lv and Xiaofei Wang, “Overview of Hyperspectral Image Classification” in Hindawi Journal of Sensors Volume 2020, Article ID 4817234, <https://doi.org/10.1155/2020/4817234>
2. Guangxing Wang, Peng Ren,” Hyperspectral Image Classification with Feature-Oriented Adversarial Active Learning”, <https://doi.org/10.3390/rs12233879>
3. Qingsong XU, Dr. Xin Yuan, Chaojun Ouyang, Yue Zeng, “Attention-Based Pyramid Network for Segmentation and Classification of High-Resolution and Hyperspectral Remote Sensing Images”, Remote Sens. 2020, 12(21), 3501; <https://doi.org/10.3390/rs12213501>
4. LanXue Dang, Peidong Pang, Jay Lee “Depth-Wise Separable Convolution Neural Network with Residual Connection for Hyperspectral Image Classification” Remote sens.2020, 12(20), 3408; <https://doi.org/10.3390/rs12203408>
5. A. Sellami, M. Farah, I.R. Farah, B. Solaiman,” Hyperspectral imagery semantic interpretation based on adaptive constrained band selection and knowledge extraction techniques” IEEE J. Sel. Top. Appl. Earth Obs. Remote.Sens., 11 (4) (2018), pp. 1337-1347, <https://doi.org/10.1109/JSTARS.2018.2798661>
6. Elham Kordi Ghasrodashti, NabinSharma,” Hyperspectral image classification using an extended Auto-Encoder method”, <https://doi.org/10.1016/j.image.2020.116111>



1. Name of Candidate ..... DIVYA . V. CHANDRAN .....  
 (In English, in block capitals, initials after the name)  
 (a) Expansion of initials, if any ..... VENATTIL .....  
 (b) Name in Regional Language ..... ബി. വി. ചന്ദ്രൻ .....
2. Sex : (Male/Female) ..... Female .....
3. Religion ..... Hindu ..... 4. Caste ..... Nair .....
5. Place of birth ..... Athani .....  
 (a) Panchayat or Town ..... Nedumbassery ..... (b) Country ..... India .....
6. Date of birth (In figures) ..... 12-05-1988 .....  
 (In words) ..... Twelve May Nineteen Eighty Eight .....
7. Name of father ..... P. K. Chandran .....
8. Name of mother ..... M. G. Ammini .....
9. Name of guardian ..... P. K. Chandran .....  
 (As given in the Admission Register)
10. Relationship of the Guardian with the pupil ..... Father .....
11. Occupation of the Parent/Guardian ..... Lecturer .....
12. Parent's or Guardian's Postal Address ..... Stee Nilayam .....  
Athani . P.O. Angamaly - 683585 .....
13. Personal Marks of Identification :
- (i) A black mole on the right side of lip .....
- (ii) A black mole on the right side of forehead .....

| Schools attended                                    | Period of study |      | Classes |
|---|-----------------|------|---------|
|   | From            | To   |         |
| MODEL TECHNICAL HIGHER SECONDARY SCHOOL, KAPRASSERY | 2000            | 2001 | VIII    |
| HIGHER SECONDARY SCHOOL, KAPRASSERY                 | 2001            | 2002 | IX      |
| SCHOOL, KAPRASSERY                                  | 2002            | 2003 | X       |



I certify that the entries in this page are accurate as per relevant School records.

LATHA. P.  
 PRINCIPAL

Model Technical Higher Secondary School Principal  
 of Kaprassery & Designation.

NEDUMBASSERI-683 585  
 CHENGAMANAD



**GOVERNMENT OF KERALA**  
**BOARD OF HIGHER SECONDARY EXAMINATION**  
**HIGHER SECONDARY EXAMINATION (CLASS XII)**

No. HSE 0002684

**CERTIFICATE**

Register Number **1639101**

This is to certify that Mr/Ms **DIVYA..V..CHANDRAN**.....has appeared for the  
**TECHNICAL HIGHER SECONDARY EXAMINATION** held in ..... **MARCH, 2005**.....

He/She has .... **PASSED** the Examination with **Distinction**.....

The marks obtained by the Candidate are shown below :

| SUBJECTS   | Marks Obtained |            |                   | Min. Marks | Max. Marks |
|--|----------------|------------|-------------------|------------|------------|
|  | In figures     |            | In words          |            |            |
|  | Subject        | Part Total |                   |            |            |
| <b>PART I</b><br><b>ENGLISH</b>                      | 75             | 75         | Seven Five        | 35         | 100        |
| <b>PART II</b><br><b>COMPUTER</b> Theory             | 61             |            |                   | 21         | 70         |
| <b>INFORMATION</b> Practical                         | 22             |            |                   | ...        | 30         |
| <b>TECHNOLOGY</b> Total                              | 83             | 83         | Eight Three       | 35         | 100        |
| <b>PART III (Optionals)</b><br><b>PHYSICS</b> Theory | 55             |            |                   | 21         | 70         |
| Practical  | 28             |            |                   | ...        | 30         |
| Total  | 83             | 83         | Eight Three       | 35         | 100        |
| <b>CHEMISTRY</b> Theory                              | 61             |            |                   | 21         | 70         |
| Practical  | 27             |            |                   | ...        | 30         |
| Total  | 88             | 88         | Eight Eight       | 35         | 100        |
| <b>MATHEMATICS</b>                                   | 79             | 79         | Seven Nine        | 35         | 100        |
| <b>ELECTRONIC</b> Theory                             | 59             |            |                   | 21         | 70         |
| <b>SERVICE</b> Practical                             | 24             |            |                   | ...        | 30         |
| <b>TECHNOLOGY</b> Total                              | 83             | 83         | Eight Three       | 35         | 100        |
| <b>TOTAL FOR PART III</b>                            |                | 333        | Three Three Three | 140        | 400        |
| <b>GRAND TOTAL (PARTS I, II, III)</b>                |                | 491        | Four Nine One     | 210        | 600        |

Place Thiruvananthapuram

Date

13/05/2005



*(Signature)*  
 Joint Director (Examinations),  
 Department of Higher Secondary Education,  
 Government of Kerala.



കാലിക്കറ്റ് യൂണിവേഴ്സിറ്റി

FACULTY OF ENGINEERING

Whereas it has been certified by duly appointed Examiners that  
*Divya. V. Chandran*  
is qualified to receive  
the Degree of Bachelor of Technology (B. Tech.)  
in Branch Electronics & Communication Engineering ,  
she having been placed in First Class with Honours  
at the Examination held in  
June 2009 (Reg. No. MTAFEEC012)

The Senate of the University of Calicut hereby confers on her  
the Degree of  
*Bachelor of Technology*

with all the Rights, Privileges and Honours thereunto appertaining.

Given under the seal of the University

CALICUT UNIVERSITY P O  
Kerala INDIA  
PIN-673 635

*A. J. Anwar,*

VICE CHANCELLOR



Date ..... 31/12/2009

Nº 213526



The Syndicate of the Anna University Tiruchirappalli hereby makes known that DIVYA V CHANDRAN has been admitted to the DEGREE OF MASTER OF TECHNOLOGY in REMOTE SENSING under the Faculty of Civil Engineering having completed the prescribed programme of study and having been certified by the duly appointed examiners to be qualified to receive the same and has been placed in FIRST CLASS WITH DISTINCTION at the Examination held in MAY 2011.



Given Under the seal of the University

திருச்சிராப்பள்ளி  
Tiruchirappalli-620 024  
India  
JUNE 2012  
513SCE091223827

தேர்வு நெறியாளர் (பொ)  
CONTROLLER OF EXAMINATIONS (பொ)

பதிவாளர்  
REGISTRAR

துணைவேந்தர்  
VICE CHANCELLOR



### TECHNICAL HIGH SCHOOL LEAVING CERTIFICATE EXAMINATION

Name..... **DIVYA V. CHANDRAN**

Register No. **2524** ..... of March **2003**

| Subjects   | Marks at the Public Examination |                           |       |               |             | Group total<br>in words | State average |
|--|---------------------------------|---------------------------|-------|---------------|-------------|-------------------------|---------------|
|  | Maximum Marks                   | Minimum required for pass |       | Marks awarded |             |                         |               |
|  |                                 | Subject                   | Group | Subject Total | Group Total |                         |               |
| <b>Group A</b>                                   |                                 |                           |       |               |             |                         |               |
| English I Paper                                  | 50                              | 20                        | 45    | 40            | 124         | One Two Four            |               |
| English II Paper                                 | 50                              |                           |       | 40            |             |                         |               |
| Malayalam  | 50                              | 10                        | 44    |               |             |                         |               |
| <b>Group B</b>                                   |                                 |                           |       |               |             |                         |               |
| Humanities                                       | 100                             | 20                        | 120   | 79            | 283         | Two Eight Three         |               |
| Mathematics I Paper                              | 50                              | 20                        |       | 49            |             |                         |               |
| Mathematics II Paper                             | 50                              | 20                        |       | 45            |             |                         |               |
| Physics  | 100                             | 20                        |       | 68            |             |                         |               |
| Chemistry  | 50                              | 10                        |       | 42            |             |                         |               |
| <b>Group C</b>                                   |                                 |                           |       |               |             |                         |               |
| Biology  | 100                             | 20                        | 60    | 81            | 170         | One Seven Zero          |               |
| Computer Science III                             | 50                              | 10                        |       | 47            |             |                         |               |
| Electrical Technology II                         | 50                              | 10                        |       | 42            |             |                         |               |
| <b>Group D</b>                                   |                                 |                           |       |               |             |                         |               |
| 1. Electronics Production Technology (Practical) | 100                             | 50                        | 100   | 96            | 4181        | One Eight one           |               |
| 2. Computer Lab III                              | 50                              | 25                        |       | 41            |             |                         |               |
| Electronics II (Theory)                          | 50                              | 10                        |       | 44            |             |                         |               |
| <b>Group E</b>                                   |                                 |                           |       |               |             |                         |               |
| Sessional Marks                                  | 100                             | 60                        | 60    | 87            | 87          | Eight Seven             |               |
| <b>Aggregate</b>                                 | 1000                            |                           | 400   |               | 845         | Eight Four Five         |               |

Trade..... **ELECTRONICS**

(to be mentioned in block letters)

PASSED

**S. RAJENDRAN**  
Secretary  
Dept of Public Examinations  
Kerala



**GOVERNMENT OF KERALA**  
**BOARD OF HIGHER SECONDARY EXAMINATION**  
**HIGHER SECONDARY EXAMINATION (CLASS XII)**

No. HSE 0002684

**CERTIFICATE**

Register Number **1639101**

This is to certify that Mr/Ms **DIVYA.V..CHANDRAN**.....has appeared for the  
**TECHNICAL HIGHER SECONDARY EXAMINATION** held in ..... **MARCH 2005**.....

He/She has .... **PASSED** the Examination with **Distinction**.....

The marks obtained by the Candidate are shown below :

| SUBJECTS   | Marks Obtained               |                |            | Min. Marks        | Max. Marks            |
|--|------------------------------|----------------|------------|-------------------|-----------------------|
|  | In figures                   |                | In words   |                   |                       |
|  | Subject                      | Part Total     |            |                   |                       |
| <b>PART I</b><br><b>ENGLISH</b>  | 75                           | 75             | Seven Five | 35                | 100                   |
| <b>PART II</b><br><b>COMPUTER</b><br><b>INFORMATION</b><br><b>TECHNOLOGY</b> | Theory<br>Practical<br>Total | 61<br>22<br>83 | 83         | Eight Three       | 21<br>70<br>35<br>100 |
| <b>PART III (Optionals)</b><br><b>PHYSICS</b>                                | Theory<br>Practical<br>Total | 55<br>28<br>83 | 83         | Eight Three       | 21<br>70<br>35<br>100 |
| <b>CHEMISTRY</b>   | Theory<br>Practical<br>Total | 61<br>27<br>88 | 88         | Eight Eight       | 21<br>70<br>35<br>100 |
| <b>MATHEMATICS</b>   |                              | 79             | 79         | Seven Nine        | 35<br>100             |
| <b>ELECTRONIC</b><br><b>SERVICE</b><br><b>TECHNOLOGY</b>                     | Theory<br>Practical<br>Total | 59<br>24<br>83 | 83         | Eight Three       | 21<br>70<br>35<br>100 |
| <b>TOTAL FOR PART III</b>  |                              |                | 333        | Three Three Three | 140<br>400            |
| <b>GRAND TOTAL (PARTS I, II, III)</b>  |                              |                | 491        | Four Nine One     | 210<br>600            |

Place: Thiruvananthapuram  
 Date: 13/05/2005



*[Signature]*  
 Joint Director (Examinations),  
 Department of Higher Secondary Education,  
 Government of Kerala.



# UNIVERSITY OF CALICUT

Dated: 07.08.2009

## STATEMENT OF MARKS

Name : **DIVYA V CHANDRAN** Register Number: **MTAFEEC012**  
 Month & Year: **June 2009**  
 Course: **B.Tech ELECTRONICS AND COMMUNICATION ENGINEERING**  
 Semester: **VIII**

| Code                           | Paper                                    | Marks Awarded |            | Maximum Marks |            | Result |
|--------------------------------|--|---------------|------------|---------------|------------|--------|
|                                |  | Written       | Sessional  | Written       | Sessional  |        |
| EC04801                        | MICRO ELECTRONIC TECHNOLOGY              | 60            | 48         | 100           | 50         | PASSED |
| EC04802                        | WIRELESS MOBILE COMMUNICATION            | 90            | 46         | 100           | 50         | PASSED |
| EC04803                        | COMMUNICATION SWITCHING SYSTEM           | 63            | 47         | 100           | 50         | PASSED |
| <b>ELECTIVE II</b>             |  |               |            |               |            |        |
| EC04804E                       | BIOMEDICAL INSTRUMENTATION               | 63            | 49         | 100           | 50         | PASSED |
| <b>ELECTIVE III</b>            |  |               |            |               |            |        |
| EC04805D                       | TELEVISION ENGINEERING AND RADAR SYSTEMS | 70            | 47         | 100           | 50         | PASSED |
| <b>PRACTICALS</b>              |  |               |            |               |            |        |
| EC04806(P)                     | ADVANCED COMMUNICATION LAB               | 78            | 47         | 100           | 50         | PASSED |
| EC04807(P)                     | PROJECT                                  |               | 86         |               | 100        | PASSED |
| EC04808(P)                     | VIVA VOCE                                | 84            |            | 100           |            | PASSED |
| <b>Total of VIII Semester:</b> |  | <b>508</b>    | <b>370</b> | <b>700</b>    | <b>400</b> |        |

### Marks of Previous Semesters

|                                    |             |             |             |             |
|------------------------------------|-------------|-------------|-------------|-------------|
| <b>Total of I and II Semester:</b> | <b>589</b>  | <b>520</b>  | <b>900</b>  | <b>600</b>  |
| <b>Semester: III:</b>              | <b>532</b>  | <b>365</b>  | <b>800</b>  | <b>400</b>  |
| <b>Semester: IV:</b>               | <b>577</b>  | <b>379</b>  | <b>800</b>  | <b>400</b>  |
| <b>Semester: V:</b>                | <b>534</b>  | <b>381</b>  | <b>800</b>  | <b>400</b>  |
| <b>Semester: VI:</b>               | <b>418</b>  | <b>368</b>  | <b>700</b>  | <b>400</b>  |
| <b>Semester: VII:</b>              | <b>393</b>  | <b>377</b>  | <b>600</b>  | <b>400</b>  |
| <b>Grand Total:</b>                | <b>3551</b> | <b>2760</b> | <b>5300</b> | <b>3000</b> |

Pass minimum in a subject is 60% marks at the University Examination or 40% marks at the University Examination and an aggregate minimum of 50% marks at the University Examination plus sessional marks.

End of statement



Controller of Examinations

Checked by

Section Officer

AR/DR/JR (Exams)

அண்ணா பல்கலைக்கழகம் திருச்சிராப்பள்ளி  
ANNA UNIVERSITY TIRUCHIRAPPALLI

TIRUCHIRAPPALLI - 620 024

PG CONSOLIDATED STATEMENT OF GRADES

SERIAL NO. : 38930

FOLIO NO. : CON09M1138881

|                       |  |                          |                              |
|-----------------------|--|--------------------------|------------------------------|
| NAME OF THE CANDIDATE | DIVYA V CHANDRAN                                   | REGISTER NO.             | 91009513002                  |
| COLLEGE OF STUDY      | 910-P.S.N.A. COLLEGE OF ENGINEERING AND TECHNOLOGY | TOTAL NO. OF SEM. / YEAR | 4 Semesters / 2 Years        |
| PROGRAMME & BRANCH    | 513 - M.TECH. REMOTE SENSING                       | CLASS                    | FIRST CLASS WITH DISTINCTION |
| DEGREE                | MASTER OF TECHNOLOGY                               | LAST APPEARANCE          | MAY 2011                     |

| SEM. NO. | SUBJECT CODE | SUBJECT TITLE  | CREDITS | GRADE | MONTH & YEAR OF PASSING |
|----------|--------------|--|---------|-------|-------------------------|
| 01       | MA5113       | Probability and Statistical Methods  | 4       | S     | DEC 2009                |
| 01       | RS5101       | Principles of Remote Sensing   | 3       | B     | DEC 2009                |
| 01       | RS5102       | Photogrammetry   | 3       | S     | DEC 2009                |
| 01       | RS5103       | Cartography  | 3       | A     | DEC 2009                |
| 01       | RS5104       | Geographic Information Systems   | 3       | A     | DEC 2009                |
| 01       | RS5105       | Electronics Surveying  | 3       | B     | DEC 2009                |
| 01       | RS5106       | GIS Laboratory   | 2       | S     | DEC 2009                |
| 01       | RS5107       | Photogrammetry Laboratory  | 2       | S     | DEC 2009                |
| 02       | RS5001       | Microwave Remote Sensing   | 3       | A     | MAY 2010                |
| 02       | RS5007       | Remote Sensing and GIS Applications to Earth Sciences                                | 3       | B     | MAY 2010                |
| 02       | RS5010       | Remote Sensing and GIS Applications to Ocean Engineering and Coastal Zone Management | 3       | B     | MAY 2010                |
| 02       | RS5151       | Image Processing   | 3       | A     | MAY 2010                |
| 02       | RS5152       | Visual Programming and Customization   | 3       | C     | MAY 2010                |
| 02       | RS5153       | Geographic Information System Application  | 3       | B     | MAY 2010                |
| 02       | RS5154       | Image Processing Laboratory  | 2       | S     | MAY 2010                |
| 02       | RS5160       | Seminar  | 1       | S     | MAY 2010                |
| 03       | RS5003       | Air Borne Laser Terrain Mapping (ALTM)   | 3       | B     | DEC 2010                |
| 03       | RS5009       | Remote Sensing and GIS Applications to Environmental Engineering                     | 3       | B     | DEC 2010                |
| 03       | RS5012       | Remote Sensing and GIS Applications in Disaster Mitigation and Management            | 3       | B     | DEC 2010                |
| 04       | RS5252       | Project Work Phase II  | 18      | S     | MAY 2011                |

\*\*\*End of Statement\*\*\*



| Semester Wise Grade Point Average |       |              |    |   |   | Date of Birth | 12/05/1988 |
|-----------------------------------|-------|--------------|----|---|---|---------------|------------|
| 1                                 | 2     | 3            | 4  | 5 | 6 |               |            |
| 9.217                             | 8.429 | 8            | 10 |   |   | Gender        | FEMALE     |
| Credits Earned : 71               |       | CGPA : 9.028 |    |   |   |               |            |

Tiruchirappalli - 620 024

Date of Issue : 13/12/2011

Controller of Examinations

From,

Athani,  
30/12/2020

Divya.V.Chandran  
Assistant Professor  
Dept. of ECE  
ASIET, Kalady - Kerala.

To

Dean Research  
Kalasalingam Academy of Research & Education  
Tamil Nadu

Sub: Submission of Transfer Certificate.(T.C)

Sir/Madam,

I would like to apply for Ph.D.(part-time) in your esteemed institution. As a pre-requisite, it is a mandatory requirement to upload the T.C along with the application. But unfortunately, I am not able to upload the T.C since it is not with me. I assure you that I will produce my transfer certificate as early as possible. Please consider my request favourably.

Thanking you,

Yours Sincerely,

  
30/12/2020  
Divya.V.Chandran



# Adi Shankara

## INSTITUTE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE & Affiliated to APJ Abdul Kalam Technological University

(Owned by Adi Sankara Trust)

Vidya Bharathi Nagar, Kalady, Ernakulam, Kerala, India - 683574



Accredited Programmes  
CSE, ECE, EEE & ME

No.ASIET/Mis/2020

ASIET/Kalady

30.12.2020

### EXPERIENCE CERTIFICATE

This is to certify that Mrs.Divya.V.Chandran is working in this institute as Assistant Professor in Department of Electronics and Communication Engineering since 05.01.2011 to till date.

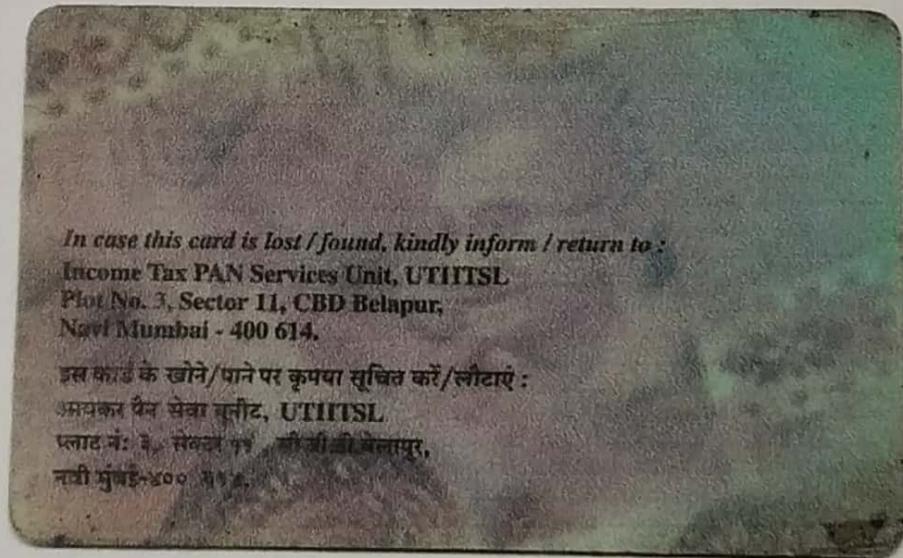
This certificate is issued only for the purpose of applying for PhD



V. L. [Signature]  
30/12/2020  
PRINCIPAL

Phone: (Office) +91 484 2463825, 2466066, 2461933 Fax: 0484-2463828

Email: info@adishankara.ac.in | Web: www.adishankara.ac.in



Self attested: Divya V. Chandran



ഇൻഡ്യ തിരഞ്ഞെടുപ്പ് കമ്മീഷൻ

ELECTION COMMISSION OF INDIA

തിരഞ്ഞെടുപ്പ് കമ്മീഷൻ ഫോട്ടോ തിരിച്ചറിയൽ കാർഡ് - ELECTOR PHOTO IDENTITY CARD



MVP1780691



പേര്

: ദിവ്യ വി ചന്ദ്രൻ

NAME

: Divya V Chandran

അച്ഛൻ്റെ പേര്

: പി കെ ചന്ദ്രൻ

FATHER'S NAME

: P K Chandran

FATHER'S NAME

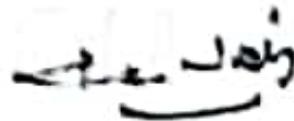
ലിംഗം/ SEX : സ്ത്രീ / Female

ജനനത്തീയതി / വയസ്സ്

DATE OF BIRTH/AGE : 12/05/1988 / 26

മേൽവിലാസം : 16/248, ശ്രീനിലയം, അത്യാണി,  
അത്യാണി പി.ഒ, 683585

ADDRESS : 16/248, Sreenilayam, Athani, Athani  
P.O, 683585



ഇലക്ടറൽ രജിസ്ട്രേഷൻ ഓഫീസർ

Date: 08/12/2014 ELECTORAL REGISTRATION OFFICER

അസംബ്ലി നിയോജകമണ്ഡലം : 76, ആലുവ  
തമ്പുരം പോലീസ്

ASSEMBLY CONSTITUENCY No. : 76, ALUVA  
& NAME

പാർട്ട് നമ്പർ : 16

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 കൈവശമുള്ളതുകൊണ്ട് മാത്രം നിങ്ങൾ നിലവിലുള്ള വോട്ടർ പട്ടികയിൽ ഒരു സമ്മതിദാതകൻ ആകണമെന്നില്ല. ഓരോ തിരഞ്ഞെടുപ്പിനും മുമ്പായി നിലവിലുള്ള വോട്ടർ പട്ടികയിൽ നിങ്ങളുടെ പേര് ഉണ്ടായാണെന്ന് 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 ചെയ്യുന്നതിനപ്പുറമെ ജനനത്തീയതി/വയസ് തെളിയിക്കുന്നതിനുള്ള ഒരു രേഖയായി പരിഗണിക്കുവാൻ പാടില്ല.

0011 075 016 0001

201500900115

ANNEXURE-I

CERTIFICATE FROM THE ORGANISATION WHERE THE CANDIDATE IS EMPLOYED

Certified that Mr./Ms./Mrs. DIVYA - V. CHANDRAN is employed as ASSISTANT PROFESSOR (Designation) in the ECE (Electronics & Communication Engg.) (Department/Division Name) of Adi Shankara Institute of Engineering & Technology, Kalady (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: 30/12/2020

V. L. N.  
30/12/2020  
Signature of the Head of Organization with office seal

