# 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:28-06-2020

| | | | |
|---|---|---|---|
| Department | INFORMATION TECHNOLOGY | Application No. | 20200158 |
| Area of Research | INFORMATION TECHNOLOGY | Research Mode | PART TIME |

**Name** :DINESH A

**Date of Birth / Age** :26-03-1991 / 29 Years

**Gender** :MALE

**Category** :MBC

**e-Mail ID** :dinesharumugam03@gmail.com

**Mobile** :8792735404

| | | | |
|---|---|---|---|
| Father's/Husband's Name | ARUMUGAM | Father's/Husband's Occupation | SELF EMPLOYED |
| Family Income | 120000 | Residental Type | RURAL |
| Birth Place | TIRUNEVELI | Mother Tongue | TAMIL |
| Religion | HINDU | Martial Status | MARRIED |
| Aadhaar No. | 439426707817 | PAN No. | ATKPD9175A |
| Physically Challenged | NO | Type of Disability | - |

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TAMIL NADU
INDIA
Pin-625531

**Permenant Address:**
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V.O.C.STREET
SAMATHARMA PURAM
THENI DISTRICT
TAMIL NADU
INDIA
Pin-625531

## Qualification

| Degree | Discipline | College/university | Year Passed | AVG/CGPA | Class | Mode |
|---|---|---|---|---|---|---|
| M.E | CSE | ANNA UNIVERSITY | 2017 | 7.76 | FIRST | REGULAR |
| B.TECH | IT | KALASALINGAM UNIVERSITY | 2012 | 7.45 | FIRST | REGULAR |
| HSC | BIO-MATHS | STATE BOARD | 2008 | 80.5 | FIRST | REGULAR |
| SSLC | MATHS-SCIENCE | STATE BOARD | 2006 | 89.2 | FIRST | REGULAR |

## Experience

| Organization | Designation | Experience From | Experience TO | Work Nature |
|---|---|---|---|---|
| XERAGO EBIZ INC | WEB DEVELOPER | 2013-02-01 | 2014-05-22 | SOFTWARE DEVELOPMENT |
| IBM | APPLICATION DEVELOPER | 2014-07-07 | 2015-05-29 | SOFTWARE DEVELOPMENT |
| IBM | APPLICATION DEVELOPER | 2017-07-04 | 2018-12-28 | SOFTWARE DEVELOPMENT |
| TCS | IT ANALYST | 2019-01-09 | 2020-06-28 | SOFTWARE DEVELOPMENT |

| Payment Details | | | | |
|---|---|---|---|---|
| Transaction ID | Reference | Date of transaction | Amount | Status |
| 20200158_200630161943 | SICI8947746786 | 30-06-2020 | 600 | SUCCESS |

| Payment Details | | | | |
|---|---|---|---|---|
| Transaction ID | Reference | Date of transaction | Amount | Status |
| 20200158_200630161943 | SICI8947746786 | 30-06-2020 | 600 | SUCCESS |

# Investigation on Crop Disease Detection using Machine Learning Algorithms

## INTRODUCTION

Agriculture gave birth to civilization. India is an agrarian country and its economy largely based upon crop production. Agriculture is the backbone of every economy. In a country like India which has ever increasing demand of food due to the raising population, advances in agriculture sector are required to meet the need. The agriculture sector needs a huge up-gradation in order to survive the changing conditions of Indian economy. For optimum yield, the crop should be healthy, therefore some highly technical method is needed for periodic monitoring of crop. Crop disease is one of the major factor which indirectly influence the significant reduction of both quality and quantity of agricultural products. A number of varieties of pesticides are available to control diseases and increase the production. But finding the most current disease, appropriate and effective pesticide to control the infected disease is difficult and requires experts advise which is time consuming and expensive.

The presence of disease on the plant is mainly reflected by symptoms on leaves. So there is a need of an automatic, accurate and less expensive Machine Vision System for detection of diseases from the image and to suggest a proper pesticide as a solution.

## LITERATURE SURVEY

Huang et al, studied the spectral characteristics of wheat and demonstrated a method to develop new spectral indices (NSIs) using RELIEF-F algorithm [2]. This method did not involve periodic monitoring of the crops.

Chenghai yang proposed a system describes the design and testing of an airborne multispectral digital imaging system for remote sensing applications. The system consists of four high resolution charge coupled device (CCD) digital cameras [4] this system involved huge maintenance cost.

Wenjiang Huang framed a systematic method for Canopy spectral characteristics of wheat infested by aphid [5], but this methodology involved tedious calculations.

Davoud Ashourloo, et. al.[11] proposed the machine learning techniques for Wheat Leaf Rust disease detection as well as evaluate the training sample size and influence of disease symptoms

effects on the methods of predictions. This paper compares the performance of PLSR, v-SVR, and GPR with the PRI and NBNDVI. The combinations of disease symptoms at each disease severity level results in complex spectra which declined the accuracies of PRI and NBNDVI while they do not have adverse impacts on PLSR, V-SVR, and GPR performances. The GPR's performance using smaller training data set results in higher accuracy than other methods.

P. Revathi, et al.[12] proposed two phases to identify the lesion region of the disease. First Edge detection technique is used for segmentation and then image analysis and classification of diseases is done using the proposed HPCCDD Algorithm. This paper proposed RGB feature based techniques in which, the captured images are processed first and then color image segmentation is carried out to get disease spots. The edge features are extracted to identify the disease spots using Sobel and Canny filter

## PROPOSED APPROACH

The proposed system has two phases, first phase deals with training datasets. Both healthy and diseased leaf images are collected. Once the dataset is ready with healthy and infected image samples, the threshold is extracted for both aging and for diseases.

Periodically images are obtained by remote sensing. RGB values of the monitored images are extracted and compared with threshold images. If the threshold is greater or less than given value, histogram analysis and edge detection techniques are used to identify particular plant diseases

## REFERENCES

[1]     Adhao Asmita Sarangdhar , V. R. Pawar , " Machine Learning Regression Technique for Cotton Leaf Disease Detection and Controlling using IoT", International Conference on Electronics, Communication and Aerospace Technology ",ICECA 2017

[2]     Huang et al., "New Optimized Spectral Indices For Winter Wheat Diseases", IEEE journal of selected topics in applied earth observations and remote sensing, pp. 128-135, 2014.

[3]     Delwiche, M. S. Kim, "Hyperspectral imaging for detection of scab in wheat", Biol. Qual. Precis. Agric., vol. 4203, pp. 13-20, 2000.

[4]     Chenghai Yang, "A high-resolution airborne four-camera imaging system for agricultural remote sensing", Computers and Electronics in Agriculture, pp. 13-24, 2012.

[5]     Zhihao Qin, Minghua Zhang, T. Christensen, Wenjuan Li, "Remote sensing analysis of rice disease stresses for farm pest management using wide-band airborne data", Geoscience and Remote Sensing Symposium, pp. 7-13, 2003.

[6]     P. R. Rothe, R. V. Kshirsagar, "Cotton Leaf Disease Identification using Pattern Recognition Techniques", International Conference on Pervasive Computing (ICPC) IEEE, pp. 1-6, 2015.

[7]     Viraj A. Gulhane, Maheshkuma R. H. Kolekar, "Diagnosis Of Diseases On Cotton Leaves Using Principal Component Analysis Classifier", Annual IEEE India Conference (INDICON), 2014.

[8]     Texa    plant    disease    handbook,    [online]    Available: http://plantdiseasehandbook.tamu.edu/industryspecial tylfiber-oil-specialty/cotton/.

[9]     Plant village Cotton, [online] Available: https://www.plantvillage.org/en/topics/cotton.

[10]     P. Revathi, M. Hemalatha, "Advance Computing Enrichment Evaluation of Cotton Leaf Spot Disease Detection Using Image Edge detection", IEEE, July 2012.

[11]     Davoud Ashourloo, Hossein Aghighi, Ali Akbar Matkan, Mohammad Reza Mobasheri, Amir Moeini Rad, "An Investigation Into Machine Learning Regression Techniques for the Leaf Rust Disease Detection Using Hyperspectral Measurement", IEEE Journal Of Selected Topics In Applied Earth Observations And Remote Sensing, pp. 1-7, May 2016.

[12]     P. Revathi, M. Hemalatha, "Classification Of Cotton Leaf Spot Disease Using Image Processing Edge Detection Technique", International Conference on Emerging Trends in Science Engineering and Technology IEEE, pp. 169-173, 2012.

# Anna University

PROGRESS THROUGH KNOWLEDGE
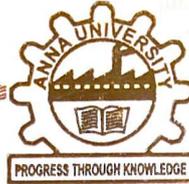
Reg.No. 910315405002/RG

The Syndicate of the Anna University hereby makes known that **DINESH A** *has been admitted to the* **DEGREE OF MASTER OF ENGINEERING** *in* **COMPUTER SCIENCE AND ENGINEERING** *under the* *Faculty of Information and Communication 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** *at the Examination held in* **JUNE 2017** .

*Given under the Seal of the University*

Chennai 600 025
India
June 2018

Controller of Examinations

Registrar

Vice-Chancellor

**KALASA**
**UNIVE**
Kalasalingam Academy o
(Under Section 3
Anand Nagar, Krishnankoil –
**CONSOLIDATE**

| Name of the Student : | DINESH.A | Register № | 9908008073 |
|---|---|---|---|

| SEM. | COURSE CODE | | NAME OF THE COURSE | ATTENDANCE CODE | CREDITS | GRADE | MONTH & YEAR OF PASSING |
|---|---|---|---|---|---|---|---|
| | | | **CGPA COURSES** | | | | |
| 1 | CHY105 | C2 | Chemistry | H | 3 | C 6 | Nov/Dec 2008 |
| 1 | CSE102 | C3 | Programming Languages | 9 | 2 | B 7 | Nov/Dec 2008 |
| 1 | EEE101 | C3 | Basic Electrical and Electronics Engineering | H | 4 | B 7 | Nov/Dec 2008 |
| 1 | HSS101 | C1 | English for Technical Communication I | H | 2 | C 6 | Nov/Dec 2008 |
| 1 | MAT101 | C2 | Mathematics I | 9 | 3 | C 6 | Nov/Dec 2008 |
| 1 | PHY111 | C2 | Physics I | 9 | 3 | B 7 | Nov/Dec 2008 |
| 1 | CSE181 | C3 | Programming Languages Laboratory  6.63 | 9 | 1 | B 7 | Nov/Dec 2008 |
| 1 | PHY181 | C2 | Physics Laboratory | H | 1 | A 8 | Nov/Dec 2008 |
| 2 | CHY101 | C2 | Environmental Sciences | 9 | 2 | C 6 | Apr/May 2009 |
| 2 | CIV101 | C3 | Basic Civil and Mechanical Engineering | H | 4 | C 6 | Apr/May 2009 |
| 2 | HSS102 | C1 | English for Technical Communication II | H | 2 | B 7 | Apr/May 2009 |
| 2 | INT101 | C3 | Introduction to Information Technology | H | 3 | B 7 | Apr/May 2009 |
| 2 | MAT102 | C2 | Mathematics II | H | 3 | A 8 | Apr/May 2009 |
| 2 | MEC101 | C3 | Engineering Drawing | H | 2 | B 7 | Apr/May 2009 |
| 2 | PHY112 | C2 | Physics II  6.85 | H | 3 | B 7 | Apr/May 2009 |
| 2 | CHY181 | C2 | Chemistry Laboratory | H | 1 | B 7 | Apr/May 2009 |
| 2 | MEC181 | C3 | Workshop | H | 1 | B 7 | Apr/May 2009 |
| 3 | INT201 | C4 | Signals and Systems | H | 4 | A 8 | Nov/Dec 2009 |
| 3 | INT202 | C4 | Digital Principles and System Design | H | 3 | B 7 | Nov/Dec 2009 |
| 3 | INT203 | C4 | Operating Systems | H | 4 | B 7 | Nov/Dec 2009 |
| 3 | INT204 | C4 | Data Structures & Algorithms | H | 4 | B 7 | Nov/Dec 2009 |
| 3 | INT205 | C4 | Analog and Digital Communication  7.5 | H | 4 | A+ 9 | Nov/Dec 2009 |
| 3 | MAT208 | C2 | Mathematics III | H | 3 | B 7 | Nov/Dec 2009 |
| 3 | INT281 | C4 | Data Structures Laboratory | H | 2 | C 6 | Nov/Dec 2009 |
| 3 | INT282 | C4 | Digital and System design Laboratory | H | 2 | A+ 9 | Nov/Dec 2009 |
| 3 | INT283 | C4 | Operating Systems Laboratory | H | 2 | B 7 | Nov/Dec 2009 |
| 4 | HSS006 | C1 | Professional Ethics | H | 3 | B 7 | May 2010 |
| 4 | INT206 | C4 | Object Oriented Programming | H | 4 | A 8 | May 2010 |
| 4 | INT207 | C4 | Digital Signal Processing | H | 4 | B 7 | May 2010 |
| 4 | INT208 | C4 | Microprocessors and Microcontrollers | H | 3 | A 8 | May 2010 |
| 4 | INT209 | C4 | Computer Architecture and Organization  7.30 | H | 3 | B 7 | May 2010 |
| 4 | MAT221 | C2 | Mathematics IV | H | 3 | C 6 | May 2010 |
| 4 | INT284 | C4 | Digital Signal Processing Laboratory | H | 2 | A 8 | May 2010 |
| 4 | INT285 | C4 | Microprocessors & Microcontrollers Laboratory | H | 2 | B 7 | May 2010 |
| 4 | INT286 | C4 | Object Oriented Programming Laboratory | H | 2 | A 8 | May 2010 |
| 5 | CSE365 | C5 | Advanced Computer Architecture | H | 3 | B 7 | Nov/Dec 2010 |
| 5 | INT301 | C4 | Visual Programming | H | 4 | A 8 | Nov/Dec 2010 |
| 5 | INT302 | C4 | Telecommunication Systems and Switching Techniques | H | 4 | B 7 | Nov/Dec 2010 |
| 5 | INT303 | C4 | Database Management Systems | 9 | 3 | A 8 | Nov/Dec 2010 |
| 5 | INT304 | C4 | Data Communication and Networking | 9 | 4 | A 8 | Nov/Dec 2010 |
| 5 | INT311 | C4 | Mobile Communication and Computing | H | 3 | A+ 9 | Nov/Dec 2010 |
| 5 | INT381 | C4 | Communication System Laboratory | 9 | 2 | A+ 9 | Nov/Dec 2010 |
| 5 | INT382 | C4 | DBMS Laboratory | H | 2 | A 8 | Nov/Dec 2010 |
| 5 | INT383 | C4 | Visual Programming Laboratory  7.25 | H | 2 | B 7 | Nov/Dec 2010 |
| 6 | CSE408 | C5 | Grid Computing | H | 3 | A 8 | Apr/May 2011 |

LINGAM
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526 190 Tamil Nadu, INDIA

Sl. № : 112569

# ) GRADE CARD

Branch : B.Tech-Information Technology          Batch : 2008-2012

| SEM. | COURSE CODE | | NAME OF THE COURSE | ATTENDANCE CODE | CREDITS | GRADE | MONTH & YEAR OF PASSING |
|---|---|---|---|---|---|---|---|
| 6 | ECE366 | C6 | Embedded Systems | H | 3 | B | Apr/May 2011 |
| 6 | HSS001 | C1 | Total Quality Management | 9 | 3 | B | Apr/May 2011 |
| 6 | INT305 | C4 | System Software | H | 3 | B | Apr/May 2011 |
| 6 | INT306 | C4 | Software Engineering | 9 | 3 | B | Apr/May 2011 |
| 6 | INT314 | C4 | Optical Communication  7.33 | 9 | 3 | A | Apr/May 2011 |
| 6 | INT384 | C4 | Network Laboratory | 9 | 2 | B | Apr/May 2011 |
| 6 | INT385 | C4 | System Software Laboratory | H | 2 | A | Apr/May 2011 |
| 6 | INT386 | C4 | Software Engineering Laboratory | H | 2 | B | Apr/May 2011 |
| 7 | INT410 | C4 | Web Services  8.45 | H | 3 | B | Nov/Dec 2011 |
| 7 | INT499 | C4 | Project Work | H | 8 | A+ | Nov/Dec 2011 |
| 8 | CIV369 | C6 | Environmental Impact Assessment | H | 3 | A | Apr/May 2012 |
| 8 | HSS012 | C1 | Advertising and Media Services | 9 | 3 | B | Apr/May 2012 |
| 8 | INT401 | C4 | Multimedia and Computer Graphics | H | 3 | A | Apr/May 2012 |
| 8 | INT402 | C4 | Component Based Technology  7.26 | 9 | 4 | B | Apr/May 2012 |
| 8 | INT407 | C4 | Enterprise Java Programming | 8 | 3 | A | Apr/May 2012 |
| 8 | INT408 | C4 | Enterprise Resource Planning | 9 | 3 | A | Apr/May 2012 |
| 8 | INT481 | C4 | Software Components Laboratory | H | 2 | A+ | Apr/May 2012 |
| 8 | INT482 | C4 | Multimedia and Computer Graphics Laboratory | H | 2 | S | Apr/May 2012 |
| | | | **Non-CGPA COURSES** | | | | |
| 6 | NCG1004 | | National Service Scheme | | 3 | Pass | |
| 6 | NCG2001 | | Industrial Training - I | | 3 | Pass | |
| 6 | NCG2002 | | Industrial Lectures | | 3 | Pass | |
| 8 | NCG1001 | | Soft Skills | | 3 | Pass | |
| 8 | NCG1002 | | Sports | | 3 | Pass | |
| 8 | NCG1005 | | Extracurricular Activities | | 3 | Pass | |
| 8 | NCG2003 | | International Certifications | | 3 | Pass | |
| 8 | NCG2004 | | Cocurricular Activities | | 3 | Pass | |
| 8 | NCG2005 | | International Languages | | 3 | Pass | |
| 8 | NCG3001 | | Industrial Training - II | | 3 | Pass | |

**Category wise total credits earned**

C1:Humanities          13   C2:Basic Sciences       25
C3:Basic Engineering   17   C4:Professional Major   112
C5:Minor Elective       6   C6:Free Elective          6

| CGPA CREDITS | | | | NON-CGPA CREDITS | |
|---|---|---|---|---|---|
| EARNED | TOTAL TO BE EARNED | CGPA | CLASS AWARDED | EARNED | TOTAL TO BE EARNED |
| 179 | 179 | 7.4525 | First Class | 30 | 21 |

*Please see overleaf for details*

Place : Krishnankoil

DIRECTOR (ACADEMIC)
KRISHNANKOIL
- 626 190.
KALASALINGAM UNIVERSITY

Date : 19/05/2012

Director (Academic)

# CHENDHURAN
## COLLEGE OF ENGINEERING AND TECHNOLOGY
Madurai Main Road, Lena Vilakku, Pilivalam (Po), Thirumayam Tk.
Pudukkottai - 622 507.

## Transfer Certificate

Reg. No: 910315405002

Serial No: **1918**

| | | |
|---|---|---|
| 1 | Name of the Student | : DINESH·A |
| 2 | Name of the Father / Guardian | : ARUMUGAM·K |
| 3 | Date of Birth as entered in the Admission Register (in Words) | : 26·03·1991 TWENTY SIX - MARCH - NINETEEN NINETY ONE |
| 4 | Nationality, Religion & Caste | : INDIAN, HINDU, PIRAMALAI KALLAR |
| 5 | Sex | : Male / ~~Female~~ |
| 6 | Date of Admission and Course in which admitted | : 01·09·2015 M·E COMPUTER SCIENCE AND ENGINEERING |
| 7 | Date on which the student left the College | : 27·06·2017 |
| 8 | Class in which the student was studying at the time of leaving the college | : II YEAR M·E COMPUTER SCIENCE AND ENGINEERING |
| 9 | Whether qualified for promotion to the higher class | : REFER MARKSHEET |
| 10 | Reason for leaving the institution | : COURSE COMPLETED |
| 11 | Date of issue of T.C | : 27·06·2017 |
| 12 | Student's conduct and character | : GOOD |

Date 27·06·2017

Principal

**PRINCIPAL**
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आयकर विभाग INCOME TAX DEPARTMENT

भारत सरकार GOVT. OF INDIA

DINESH A
ARUMUGAM

26/03/1991

Permanent Account Number
ATKPD9175A

Signature

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**Unique Identification Authority of India**
**Government of India**

பதிவு அடையாளம் / Enrollment No. : 2007/23855/29557

23/11/2013

To
**Dinesh Arumugam**
தி-னேஷ் ஆறுமுகம்

S/O: Arumugam
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V O C STREET
SAMADHARMAPURAM
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Tamil Nadu - 625531
8760921542

KL789844764FT

78984476

உங்கள் ஆதார் எண் / Your Aadhaar No. :

# 4394 2670 7817

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

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இந்திய அரசாங்கம்
**Government of India**

தினேஷ் ஆறுமுகம்
**Dinesh Arumugam**

பிறந்த நாள்/DOB: 26/03/1991
ஆண்பால் / Male

**4394 2670 7817**

ஆதார் - சாதாரண மனிதனின் அதிகாரம்