PROFILE

Dr. S. PARVATHI
W/o. A. Kumaraguru
552E1/5, S.S. Nagar,
Pallakku Road,
Kovilpatti – 628 501.
Tamil Nadu, India.
Email: srathi2611@gmail.com
Mobile no: 9944868956

Career Objective:

Looking for a challenging and progressive career in any field wherein I can add values to your esteemed organization with my skills, knowledge and organizing abilities.

Educational Qualifications:

Qualification	Mode of Study	Branch	Name of the institution	Month & Year of passing	% of Marks / CGPA
SSLC	Full Time	--	Government Girls Higher Secondary School, Kovilpatti	April 1998	87.2
Diploma	Full Time	Electrical and Electronics Engineering	Lakshmi Ammal Polytechnic College, Kovilpatti	April 2001	82.04
B.E	Part Time	Electronics and Communication Engineering	MIT Campus, Anna University,Chennai	April 2012	6.39
M.E	Full Time	Control and Instrumentation Engineering	National Engineering College, Kovilpatti	April 2014	7.80
Ph.D	Full Time	Faculty of Electrical Engineering	Anna University, Chennai	June 2023	9.0

Working Experiences:

Teaching:

- Working as an Assistant Professor in Department of Electronics and Communication Engineering at Unnamalai Institute of Technology, Kovilpatti from 01st August 2023 to till date.

Research:

- Worked as Senior Research Fellow in Department of Science and Technology, New Delhi, India funded project titled "Fully automated coconut harvesting machine" carried out at National Engineering College, Kovilpatti from September 2017 to September 2018.

- Worked as Junior Research Fellow in Department of Science and Technology, New Delhi, India funded project titled “Fully automated coconut harvesting machine” carried out at National Engineering College, Kovilpatti from October 2015 to September 2017.

Patent(s) filed:

- Parvathi Subramanian and Tamil Selvi Sankar, National Engineering College, Kovilpatti.

  Title of the invention: **A DEVICE AND AN APPARATUS FOR SCALING AND HARVESTING WOODY AND LEAFY MEMBERS BEARING COCONUTS**

  Patent application number: 202341073804
  Patent Status: Awaiting for Examination

Journals, Book chapters published and Conferences, Seminars attended:

Journal publications:

No of papers published in Journals: 5

Scopus Author ID: 56884490600

h-Index [As per scopus]: 3

- Durairaj, S., **Subramanian, P.** & Swamy, C.S.M. Classification of diabetic retinopathy severity level using deep learning. International Journal of Diabetes in Developing Countries (2024). https://doi.org/10.1007/s13410-024-01329-1. Impact factor: 0.9. No. of citations: 0

- **Subramanian, Parvathi**, Sankar & Tamil Selvi 2021, ‘Development of a novel coconut tree-climbing machine for harvesting’, Mechanics Based Design of Structures and Machines, vol. 51(5), pp.2757-2775, https://doi.org/10.1080/15397734.2021.1907756, Impact Factor: 2.286. No. of citations: 3

- **Parvathi, Subramanian**, Tamil Selvi Sankar 2021, ‘Detection of maturity stages of coconuts in complex background using Faster R-CNN model’, Biosystems Engineering, vol. 202, pp.119-132, https://doi.org/10.1016/j.biosystemseng.2020.12.002,
  Impact Factor: 4.123. No. of citations: 87

- Dr. D. Santhi, Dr. D. Manimegalai, **Mrs. S. Parvathi**, and Dr. S. Karkuzhali 2016, “Segmentation and classification of bright lesions to diagnose diabetic retinopathy in retinal images”, Biomedical Engineering / Biomedizinische Technik - De Gruyter Vol.61, Issue.4, pp.443-453, April-2016 , DOI: DOI 10.1515/bmt-2015-0188. No. of citations:11

- **Mrs.S.Parvathi**, Dr.D.Santhi 2015, "Segmentation of Bright Lesions in Diabetic Retinopathy Retinal Images" International Journal of Applied Engineering Research Vol.10, Issue.20, pp.19834-19839, September-2015. No. of citations:0

- **Parvathi, Subramanian**, Tamil Selvi, Sankar. Classification and detection of two major maturity stages of coconut using deep learning techniques. Communicated to international journal of pattern recognition and artificial intelligence. Impact factor: 1.373.

- **Parvathi, Subramanian**, Tamil Selvi, Sankar. Coconut detection and its cutting point identification using image processing. Communicated to Signal, Image and Video Processing. Impact factor: 1.583.

<u>Book Chapters:</u>

- **Subramanian P.**, Sankar T.S. (2022) Coconut Maturity Recognition Using Convolutional Neural Network. In: Uddin M.S., Bansal J.C. (eds) Computer Vision and Machine Learning in Agriculture, Volume 2. Algorithms for Intelligent Systems. Springer, Singapore. https://doi.org/10.1007/978-981-16-9991-7_7

- Dr.S.Tamil Selvi, **S.Parvathi** (2020) Application of Artificial Intelligence and Machine Learning in Agriculture, in Recent Developments in Computing, Electronics and Mechanical Sciences (ISBN: 978-81-941281-9-9) published by ANVI Books & Publishers, Delhi during June - July, 2020.

<u>Conferences:</u>

- **P. Subramanian** and S. Durairaj, "Segmentation of Lesions from Fundus Images to Grade the Diabetic Retinopathy," 2023 Intelligent Computing and Control for Engineering and Business Systems (ICCEBS), Chennai, India, 2023, pp. 1-6, doi: 10.1109/ICCEBS58601.2023.10448627.

- **Parvathi, Subramanian** & Tamil Selvi Sankar 2021, 'Short review on climbing machines and its applications for the development of coconut tree climber for harvesting', IEEE International Conference on Emerging Technologies and Applications for a Smart and Sustainable World (ICEmTASS'21)', National Engineering College, Kovilpatti, during December 16-18, 2021.

- **Parvathi, Subramanian** & Tamil Selvi Sankar 2017, 'Design and fabrication of a 4 DOF robot arm for coconut harvesting', IEEE International Conference on Intelligent Computing and Control, Karpagam College of Engineering, Coimbatore, during June 23-24, 2017.

- **Parvathi, Subramanian** & Santhi D "Segmentation of Bright lesions in Diabetic Retinopathy Retinal Images", Internationl conference on "ICIIECS – Innovations in Information, Embedded and Communication Systems", Karpagam College of Engineering, Coimbatore during March 13-14, 2014.

- **Parvathi, Subramanian** & Santhi D "Detection of Drusen in Retinal Images for the Diagnosis of Diabetic Retinopathy", International conference on "ENIAC- Explorations and Innovations in Advanced Computing", National Engineering College, Kovilpatti during January 8-10, 2014.

<u>Seminars:</u>

- Attended two day Hands-on training programme on "Embedded System Design using

ARM7 LPC2148" organized by Electronics and Instrumentation Engineering department, National Engineering College, Kovilpatti during 02nd and 03rd December 2016.

- Attended seminar on "2nd SERB School on Robotics", organized by Indian Institute of Technology Madras, Chennai during November 14-19, 2016.

- Attended National Seminar On "RINDE'13 - Research Issues on Non Destructive Evaluation" organized by Electronics and Instrumentation Engineering department, National Engineering College, Kovilpatti during September 19-21, 2013.

Research work details:

Ph.D:

Course work carried out during Ph.D:
1. Design of embedded systems
2. Robot design and programming
3. Advanced digital image processing
4. Smart sensors

Research Supervisor: Dr. S. Tamil Selvi, Professor, Dept. of ECE, National Engineering College, Kovilpatti, Tamil Nadu, India.

Thesis Title: Detection, Identification and harvesting of mature coconut

- Coconut tree climbing machine using wheel-driven mechanism with anti-falling capability to harvest coconuts was designed and developed. The developed coconut tree climbing machine was tested in a real-time environment on 9m height coconut tree with the trunk circumference of 0.66m.
- Initially, the recognition of coconuts and similar colored objects such as leaflets and leafstalks in the background was performed using Deep Convolution Neural Network (DCNN), SVM, K-Nearest Neighbour (KNN), Decision Tree, and Naïve Bayes.
- The recognition of two major coconut maturity stages such as tender and mature coconut was carried out with seven different CNN architectures like VGG16, VGG19, Xception, MobileNet, InceptionV3, InceptionResNetV2, and ResNet50.
- Further, Faster R-CNN with ResNet50 model is used to identify tender coconuts and mature coconuts separately as well as located in the same image. The test results showed that the detection performance achieved using the improved Faster R-CNN model was better than other object detectors such as the Single Shot Detector (SSD), You Only Look Once (YOLO-V3) and Region-based Fully Convolutional Networks (R-FCN).
- The training and testing of this work performed on Google Colab.
- Programs were written in Python with OpenCV.
- The motor control, image acquisition, image processing, and the control of harvester arm have been made with an embedded processor board - Beaglebone Black.

Research Highlights:

- To the best of our knowledge, we are the only one who has done work on the development of a deep learning-based coconut detection system for maturity stage identification.

- Reference: Our research work cited by Divyanth, L.G.; Soni, P.; Pareek, C.M.; Machavaram, R.; Nadimi, M.; Paliwal, J. Detection of Coconut Clusters Based on Occlusion Condition Using Attention-Guided Faster R-CNN for Robotic Harvesting. Foods **2022**, 11, 3903. https://doi.org/10.3390/foods11233903

M.E:

Project Guide: Dr. D. Santhi, Associate Professor, Dept. of EIE, National Engineering College, Kovilpatti, Tamil Nadu, India.

Project Title: Detection of bright lesions in retinal images for Diabetic Retinopathy grading

- In this research work, a method is proposed to detect bright lesions of Diabetic Retinopathy and ARMD in retinal images.
- Background image approach along with inverse segmentation is used to detect bright lesions.
- Features such as Area, Perimeter, Size, Shape, Mean, Standard Deviation, Skewness, Variance, Covariance and Median values are extracted.
- The classification of retinal images into normal or abnormal (DR) can be done with Neural Networks such as Feed forward back propagation neural network and Pattern recognition neural network.
- Further, on the abnormal (DR) images three class classification done for Exudates, Cotton Wool Spots and Drusen using Probabilistic neural network, Radial basis network and Feed forward back propagation neural network.
- Programs were written in MATLAB.

B.E:

Project Guide: Mrs. A. Viji, Dept. of ECE**,** Madras Institute of Technology, Anna University, Chennai, Tamil Nadu, India.

Project Title: Probabilistic Neural Network for Brain Tumor classification

- In this research work the Probabilistic Neural Network with image and data processing techniques was employed to implement an automated brain tumour classification.
- Programs were written in MATLAB

Industrial Working Experiences:

- Worked as Sales Co-ordinator at Tangent Test Technologies, Chennai from December 2009 to April 2012.

- Worked as Service Co-ordinator at M/s Electrotek Instruments (P) Ltd., Chennai from July 2008 to November 2009.

- Worked as Technical Assistant at Tuticorin Thermal Power Station, Tuticorin (under C.K.Engg.Enterprises, Tuticorin) from June 2001 to September 2005.

Additional Working Experience:

- Worked as Personal Secretary to Dr. S.L. Mannan, Dean (R&D) at National Engineering College, Kovilpatti from October 2005 to June 2008.

Computer Knowledge:

Programming Languages	:	Python, MATLAB and C
Operating System	:	Windows and Linux 9.0, Ubuntu
Software	:	MS Office, LibreOffice

Personal Profile:

- Comprehensive problem solving abilities
- Ability to deal with people diplomatically
- Willingness to learn
- Team facilitator, hard worker & Aspiration to develop new stuffs

Other skills:

- Typewriting Senior grade in English
- Typewriting Senior grade in Tamil
- Shorthand Junior grade in English

Personal details:

Name	:	PARVATHI. S
Father's Name	:	Subramanian. G
Date of Birth	:	02nd June 1983
Marital Status	:	Married
Contact Address	:	W/o. A. Kumaraguru 552E1/5, S.S . Nagar, Pallakku Road, Kovilpatti – 628 501.
Contact Number	:	9944868956
Languages Known	:	English, Hindi and Tamil

Declaration

I hereby declared that the above provided details are true to the best of my knowledge and belief.

Date : 10.05.2025
Place : Kovilpatti

Yours faithfully,

(S.PARVATHI)