



People's Education Trust (R)

P.E.S. College of Engineering, Mandya

Estd. In the year 1962, Autonomous Institution, Aided by the Government of Karnataka,
Affiliated to Visvesvaraya Technological University, Belagavi, Approved by AICTE, New Delhi.

Department of Electronics and Communication Engineering

Research Center at Department of Electronics and Communication Engineering is recognized by Visvesvaraya Technological University, Belgaum and University of Mysore. The department has well-equipped Research laboratories, which will be used by the faculties and students to carry out the R&D work. There are two Center of Excellence sponsored by VGST grant from Government of Karnataka as well as one Center of Excellence established by the college. They are

- (1) Centre of Excellence in VLSI design Laboratory
- (2) Centre of Excellence in Medical Imaging Laboratory
- (3) Centre of Excellence in Microchip Embedded System

Research Centre details

University	Year of Recognition	Reference Number
Visvesvaraya Technological University, Belagavi	2002	VTU/Aca./Res. Cent./A4/2024-25/3227/15
University of Mysore	2002	PMEB/CDC/232/PET/2004-05, Date 28 th Oct,2024

Centre of Excellence in VLSI Design Laboratory

The concept and objectives of VLSI designs Centre

Promoting VLSI research and education leading to product development and commercialization, to create awareness about VLSI technology among the students or researchers as a potential field of research and entrepreneurship, to create specialised VLSI designs skill among the students to provide specialized training and services to existing VLSI designs centre, to promote research and project collaboration between PESCE, Mandya and existing VLSI design and embedded system organization. Aiding existing companies through access to expensive EDA tools, and infrastructure available with the center to encourage VLSI design house for setting up their industries in Mandya district by providing infrastructures support with nominal charge from this incubation Centre to help in chip design and programme



People's Education Trust (R)

P.E.S. College of Engineering, Mandya

Estd. In the year 1962, Autonomous Institution, Aided by the Government of Karnataka,
Affiliated to Visvesvaraya Technological University, Belagavi, Approved by AICTE, New Delhi.

Department of Electronics and Communication Engineering

Centre of Excellence in Medical Imaging Laboratory

Objectives

- To study the various medical image modalities like X rays, CT scan, MRI, mammograms etc... and to compare their relative merits and demerits
- To develop novel medical image processing algorithms for easy detection of abnormalities, and for further analysis
- To develop a software to communicate image and patients data to various medical centres or hospitals etc...

Background of the Programme

The aim of this is to facilitate cost efficient healthcare and improve the patient outcome through medical imaging. Further it is helpful to exploit the innovations to create industrial enterprises. As health care has become important in present scenario, early detection of any disease is playing a vital role. Under this context medical image analysis has become important. As computerization has facilitated the image analysis, the basic concept about the subject is very essential, hence a background knowledge of this subject is exposed in this laboratory to the students. Also, several projects related to healthcare may be taken up. This software and hardware knowledge about the various instrument is also exposed in the laboratory.

Centre of Excellence in Microchip Embedded System

Objectives of the MOU

The objective of this Memorandum of Understanding, is:

- a. To promote interaction between University and Microchip, in mutually beneficial areas.
- b. Value added engagement from both parties to enhance the knowledge base of employees of Microchip and sharing industry best practices with students & faculties of various disciplines of university.
- c. To provide a formal basis for initiating interaction between University and Microchip.



People's Education Trust (R)

P.E.S. College of Engineering, Mandya

Estd. In the year 1962, Autonomous Institution, Aided by the Government of Karnataka,
Affiliated to Visvesvaraya Technological University, Belagavi, Approved by AICTE, New Delhi.

Department of Electronics and Communication Engineering

Proposed Modes of Potentials Collaboration

At Microchip's sole and absolute discretion, the parties may collaborate through one or more of the following projects or any such other projects as may be mutually agreed in between the Parties:

- a. Explore opportunities for joint research programmes undertaken by faculty of University and Microchip personnel on topics identified by Microchip.
- b. Visits by Microchip employees to the University to review / view research work and laboratories, discussions and delivering lectures on industrial practices and trends, sabbatical, and co-teaching.
- c. Workshops, conferences, and symposia with joint participation of the faculty of University and Microchip.
- d. Short-term assignment, live projects to faculty members and students in Microchip.
- e. Training / education of Microchip personnel through education programmes conducted by university in areas of interest to Microchip.
- f. Any other appropriate mode of interaction agreed upon between University and Microchip.
- g. Training / Education including practical exposure of university faculty, through Faculty Education Programs conducted by Microchip in areas of interest to the University.



People's Education Trust (R)

P.E.S. College of Engineering, Mandya

Estd. In the year 1962, Autonomous Institution, Aided by the Government of Karnataka,
Affiliated to Visvesvaraya Technological University, Belagavi, Approved by AICTE, New Delhi.

Department of Electronics and Communication Engineering

List of Students done their projects using VLSI Research Laboratory Facility

Sl.No.	Project Title	Students	Project Guide
1	Design of Low Power and Area Efficient CMOS Full Adder Using Pass Transistor Logic	Priyadarshini N J	Kumar. N. Krishnamurthy
2	Verification of Universal Memory Controller using System Verilog	S P Vignesh	Dr. K. A. Radhakrishna Rao
3	Verification of AXI2OCP Bridge using System Verilog	Sindhu J	Dr. N. M. Mahesh Gowda
4	A 8-Bit ALU design using cadence	Yuvashree G S	Sumanth S
5	Verification of Open Core Protocol Using System Verilog and Uvm	Darshan R	Dr. Mahesh
6	Verification of Dual Port Ram Using System Verilog and Uvm	Geethashree V S	Dr. M J Anand
7	Verification of Apb Protocol Using System Verilog and Uvm	Meghana Jain H K	Dr. Punith Kumar M B
8	Verification of Wishbone Interface of Soc Using System Verilog and Uvm	Pooja D. R	B.S.Nanda
9	Design And Simulation Of CMOS Spiking Neuron With Resistive Synapses	Padmaja K	Dr. Mahesh
10	Design And Verification Of UART Communication Controller Using VHDL	Sona S	Dr. N M Mahesh Gowda
11	Layout Design of Row Decoder Using Cadence	VinayaShree B S	K C Santhosh Babu
12	Radiologist Level Pneumonia Detection on Chest X-Ray With Deep Learning	Preethi B R	Dr. H S Sheshadri
		Sahana N	
		Sujay Savand V	
		Karthik S	
13	Identification of Retinopathy of Prematurity Stages In Retina Fundus Image	Bhavya	Dr. R Manjunatha
		Deepika. N	
		Divyashree. P	
		Nithya. H.S	
14	Boundary Extraction and Tortuosity Calculation in Retinal Funds Images	Arpitha L R	Dr. R.Manjunatha
		Geethapriya G	
		Raziq Khan	



People's Education Trust (R)

P.E.S. College of Engineering, Mandya

Estd. In the year 1962, Autonomous Institution, Aided by the Government of Karnataka,
Affiliated to Visvesvaraya Technological University, Belagavi, Approved by AICTE, New Delhi.

Department of Electronics and Communication Engineering

		Jayanth Gowda G P	
15	Design and Simulation of Memristor Based Neural Network for Pattern Recognition	Abhinandan L	M Subramanyam
		Anup Prakash Hosur	
		Avinash S	
		Suhas M K	
16	Design and Simulation of Memristor Based Neural Network for Classical Conditioning	Bhoomika H S	Dr. Mahesh
		Lavanya C H	
		Nathasha Vepriyana	
		Sohan G Naik	
17	VLSI implementation of bio-inspired elementary motion detector	Sindhu T K	Dr. Mahesh
		Sharanya R	
		Tharun D Gowda	
		Ankush G Nayak	
18	32-bit ALU design using Vedic mathematics	Impana C S	K C Santhosh Babu
		Impana D	
		Keerthi Shankar M S	
		Krupa Y T	
19	10/100 Mbps Ethernet MAC FIFO Controller	Nayana M G	K C Santhosh Babu
		Sreepriya	
		Raju	

List of Students done their projects using Medical Image Processing Research Laboratory Facility

Sl.No.	Project Title	Students	Project Guide
1	Real time machine learning based pest detection and pesticides sprayer with IoT based security	Dhanyashree J	Dr. Punith Kumar M.B
		Jafarsadiq K	
		Lohith E	
		Meghana M N	
2	Blind assist system using AI and image processing	Nagaswathi S	Dr. Sahana Raj B S
		Varsha H M	
		Kiran Kumar M	
		Venugopal K	
3	Hand gesture recognition for specially abled	Harshitha S	Dr. R. Manjunatha
		M.N Harshitha	



People's Education Trust (R)

P.E.S. College of Engineering, Mandya

Estd. In the year 1962, Autonomous Institution, Aided by the Government of Karnataka,
Affiliated to Visvesvaraya Technological University, Belagavi, Approved by AICTE, New Delhi.

Department of Electronics and Communication Engineering

		Mahalakshmi H.M	
		Monisha M	
4	Heart disease prediction using machine learning	Niveditha M K Poornima K Rachana K J Rohini M A	Dr. M J Anand
5	Medication of Genes Using DNA Sequence with Machine Learning	Sindhu V Sushmitha S Rukmini T Varshini M C	Dr N.M.Mahesh Gowda
6	Stress Detection in IT Professionals Using Image Processing and Machine Learning	Anjali K Ashwini N Devika Rani B S	Kusuma.H R
7	Plant Disease Detection Using Image Processing and Machine Learning	Impana C S Impana D Keerthi Shankar M S Krupa Y T	Dr. A S Mahesh Kumar
8	Smart Voting machine based on finger print and face recognition	Aishwarya B S Hema V C S Sindhushree Sushmitha B N	Dr. R Manjunatha
9	Crack Detection in Railway track using Image Processing	Arpith P D N Varun Gowda Drupad G Reethu N Jain	Dr. A S Mahesh Kumar
10	Chronic Kidney Disease Prediction using Machine Learning	Prajwal C Spoorthi V Suman Gowda K N Uday Kiran M G	Sanath Kumar M T



People's Education Trust (R)

P.E.S. College of Engineering, Mandya

Estd. In the year 1962, Autonomous Institution, Aided by the Government of Karnataka,
Affiliated to Visvesvaraya Technological University, Belagavi, Approved by AICTE, New Delhi.

Department of Electronics and Communication Engineering

List of Publications using Medical Image Processing Research Laboratory

1. "Boundary Extraction and Tortuosity Calculation in Retinal Fundus Images", R. Manjunatha, Mahesh Koti, H. S. Sheshadri, Emerging Research in Electronics, Computer Science and Technology, 2019, Volume 545, ISBN: 978-981-13-5801-2
2. "Detection of Retinal Disease Screening Using Local Binary Patterns", S. B. Manojkumar, U. ShamaFirdose, H. S. Sheshadri, Emerging Research in Electronics, Computer Science and Technology, 2019, Volume- 545, ISBN : 978-981-13-5801-2
3. "An Image Processing Approach for Compression of ECG Signals Based on 2D RLE and SPIHT", Punith Kumar M.B., ShreekanthT., PrajwalM.R., Shashank, N.S.Emerging Research in Electronics, Computer Science and Technology. Lecture Notes in Electrical Engineering, vol-545. Springer, Singapore.
4. "Detection and Classification of Epilepsy Disease using Deep Learning Techniques applied to MR Images", International Journal on Electrical Engineering and Informatics
5. "Epilepsy detection and classification based on the contour maps of brain MR images", Int. J. Medical Engineering and Informatics, DOI: 10.1504/IJMEI.2022.1005009
6. "Retinal Image Analysis for ROP Plus Diagnosis and Detection", Test Engineering & Management Jan-Feb 2020 ISSN-0193-4120 page no 15766- 15771.
7. "Evaluation Of Hybrid Segmentation Technique for Pre-Operative Brain MR Images", International Journal Of Scientific & Technology Research Volume 9, Issue 02, February 2020.
8. "Detection of Rheumatoid Arthritis using Image Processing Techniques", International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 02, 2020 ISSN: 1475-7192 February 2020 Page No 4714-4724.
9. "Retinal Image Vessel Width Analysis in Retinopathy of Prematurity", Asian Journal of Computer Science & Technology ISSN 2249-0701, Vol.8 no 2, 2019 PP 59-63.
10. "Boundary Extraction and Vessel Width Calculation in Retinal Fundus Images", Asian Journal of Computer Science & Technology ISSN 2249-0701, Vol.8 no 2, 2019 PP 63-70.
11. "Diabetic Retinopathy Classification Using Transfer Learning and Exudates Detection Using Faster-RCNN", Journal of Emerging Technologies and Innovative Research (JETIR) 2019 JETIR May 2019, Volume 6, Issue 5 (ISSN-2349-5162) pp 29-34.



People's Education Trust (R)

P.E.S. College of Engineering, Mandya

Estd. In the year 1962, Autonomous Institution, Aided by the Government of Karnataka,
Affiliated to Visvesvaraya Technological University, Belagavi, Approved by AICTE, New Delhi.

Department of Electronics and Communication Engineering

12. "Detection of Diabetic Retinopathy by Screening of Fundus Images", International Journal for Research in Applied Science & Engineering Technology (IJRASET) May 2019, Volume 7 Issue V, May 2019, ISSN: 2321-9653; SJ Impact Factor: 7.177, PP 3667-3674.
13. "Detection and Validation of Segmentation Techniques for MR Brain Tumor of Glioma Patients", International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-8 Issue-11, September 2019
14. "Cortical Thickness Analysis in the Cipher Domain for Epilepsy Status Determination", 2023 International Conference on Network, Multimedia and Information Technology (NMITCON).
15. "Compact Optimal Representation of Cortical GyrusSulcus profile and subsequent Analysis for Epilepsy Severity and Forewarning", 2022 IEEE 2nd Mysore Sub Section International Conference (MysuruCon)
16. "Performance Analysis of CNN and Quantized CNN Model for Rheumatoid Arthritis Identification Using Thermal Image", Recent Trends in Image Processing and Pattern Recognition. RTIP2R 2022. Communications in Computer and Information Science, vol 1704. Springer, Cham.
17. "Detection of Rheumatoid Arthritis Using a Convolutional Neural Network", International Conference on Innovative Computing and Communications, Advances in Intelligent Systems and Computing 1387.
18. "A Survey on Brain Ischemic Stroke Advanced Segmentation Techniques", International Conference on Computing Methodologies and Communication organised by Surya Engineering College, Erode, Tamil Nadu, India during 11th to 13th March 2020.