

ABOUT THE COLLEGE

Vemana Institute of Technology (VIT) was established in 1999 under the Karnataka ReddyJana Sangha (KRJS). KRJS is a trust formed by agricultural entrepreneurs, educationists, social workers & administrators established in 1925 to cater to the educational needs of the society rural & economically backward classes. To realize this, it has started by providing free hostel accommodation to the financially poor & rural students to pursue their education in the heart of Bengaluru at J.C. Road. This vision is renewed by spreading 11 educational institutes from primary education to professional & technical education. KRJS has reached the milestone of establishing a medical hospital at Marsur, Anekal Taluk. VIT is named after "Dharshanika Mahayogi Vemana," a saint of tall order and a social reformer who reached the familiar people with his simple and straight forward Vemana padyalu. They serve as medicine for worldly ailments. He is our guiding spirit.



Dr. Vijayasimha Reddy B G
Principal

VIT is recognized by the Government of Karnataka and affiliated to Visvesvaraya Technological University (VTU), Belagavi. It offers 7 undergraduate programs in the following engineering streams, with a total intake of 600.

1. Computer Science & Engineering
2. Electronics & Communication Engineering
3. Information Science & Engineering
4. Mechanical Engineering
5. Civil Engineering
6. Artificial Intelligence & Machine Learning
7. Computer Science & Engineering (Data Science).

Further, VIT has a total of 5 VTU-recognized research centers through which whole & part research programs are offered. Many faculties are pursuing their research under different research centers.

VIT also has a Vemana Business Incubation center (VBIC), which was established in 2015 to create an Entrepreneurship and Start-up Eco-System and motivate the young generation to become Job Providers instead of Job Seekers. In 2017 Ministry of Micro, Small & Medium scale Enterprise (MSME), Govt. of India recognized Vemana Institute of Technology as the Host Institute and Vemana Business Incubation Center as the MSME Business Incubator. Vemana Business Incubator encourages and incubates innovative and product-based ideas, under Make-in-India and Manufacture- in-India. Currently, VBIC is working on 8 funded projects in association with start-up companies.

VISION

To become a leading institute by providing quality technical education and research with ethical values.

MISSION

- **To continually improve quality education system that produces thinking engineers having good technical capabilities with human values.**
- **To nurture a good eco-system that encourages faculty and students to engage in meaningful research and development.**
- **To strengthen industry institute interface for promoting team work, internship and entrepreneurship.**
- **To enhance educational opportunities to the rural and weaker sections of the society to equip with practical skills to face the challenges of life.**

DEPARTMENT OF CHEMISTRY

(HoD: Dr. Sujata F Harlapur, Email: sujataharlapur@vemanait.edu.in, +91- 9448908643)

Major Areas of Research: Polymers, Nanomaterials, and Catalysis

Resource Persons: Dr. Sujata F Harlapur (Physical Chemistry), Dr. Vasantha V T (Inorganic Chemistry).



Research Facilities Available

Muffle furnace, Hot air oven, Photo catalytic reactor, facilities for synthesis of nanomaterials and catalysts

Research Scholars:

The department has VTU recognized R & D center. Presently six research scholars are pursuing part-time Ph.D. in different areas. The details of Research Scholars are:

| Research Scholar | Affiliation | Supervisor | Research Area | Current Status |
|----------------------|--|-----------------------|---|------------------------------|
| Rashmi B N | East West college of Engineering, Bengaluru | Dr. Sujata F Harlapur | Nano materials | Open Seminar-1 Completed |
| Ravindra Patil | Vodadora, Gujarath | | Heterocyclic Compounds and Nano materials | Comprehensive Viva Completed |
| Manjunath Madalageri | Govt. Degree College Ranebennur | | Heterocyclic Compounds and Nano materials | Comprehensive Viva Completed |
| Ravikantha N | Sapthagiri College of Engineering, Bengaluru | Dr. Vasantha V T | Heterogeneous Catalysis | Course Work under Progress |
| G Dilip Kumar | BIT, VTU | | Catalysts | Registered |
| Mandara H M | Mandara H M | | Catalysts | Registered |

Research Outcomes:

1. Chapters in Book:

- i. Sujata F Harlapur, “Antibacterial activity of neem nanoparticles on fabrics”, Book Title: Nanotechnology horizons in food process engineering, Vol.1: Food preservation, food packaging and sustainable agriculture. Publisher: Taylor and Francis Group CRC Press, ISBN: 9781774910603, (Pg.285-302). Mar. 2023.
- ii. Sujata F Harlapur, “Advanced system requirements for automotive automation”. Book Title: Software Engineering for Automotive Systems: Principles and Applications. Publisher: Taylor and Francis Group CRC Press, ISBN: 97801003269908. (Pg.45-72). Dec. 2022.

2. Patent Filed:

Dr. Vasantha V T filed a patent entitled “Four stroke petrol engine piston oil ring”, for Intellectual property India, Application Number: 334768-001.

3. Patent Granted:

Dr. Sujata F Harlapur got a grant for patent entitled “A Volatile Components Collection Unit with Incineration of Crude Plant Materials” from Intellectual property India and Published on 13.1.2023. Application number: IN202341001510A.

4. Guest Lecture Organized:

Dr. Sujata F Harlapur, organized a Guest lecture on “Glimpses of the Journey of Science” by Dr. Kalyan Raj, Professor & Head, Department of Chemistry, Bengaluru for first year students, on the eve of National Science Day, 28th Feb. 2023

DEPARTMENT OF MATHEMATICS

(HoD: Dr. Kempe Gowda, Email: kempegowdam@vemanait.edu.in, +91- 9448030171)



Major Areas of Research: Fluid dynamics – Stability analysis, fluid flow in porous media, Convection of nanofluids and Differential Geometry

Resource Persons: Dr. Kempe Gowda, (Fluid dynamics), Dr. Jayalakshamma D V (Fluid dynamics), Dr. Sharath B R (Differential Geometry).

Research Scholars:

The department has VTU recognized R & D Center. Presently one research scholar pursuing part-time Ph. D. The details of Research Scholar are:

| Research Scholar | Affiliation | Supervisor | Research Area | Current Status |
|------------------|-------------|-----------------------|----------------|------------------------------|
| Subha R N | Vemana IT | Dr. Jayalakshamma D V | Fluid Dynamics | Completed Comprehensive Viva |

Research Outcomes:

Paper Published:

- i. Sathy Suresh, S R Shanthi, A G Madaki, M Sathish Kumar, C S K Raju, “Linear and Quadratic Radiation of Dynamical Non Fourier Flux in a disk flow with the suspension of Hybrid Nanoparticles” published in Journal of Nanofluids Vol.12 pp.786-795, 2023.
- ii. Sushma T C, Nalinakshi N, Dinesh P A, Jayalakshamma D V and T Sraavan Kumar “ Convective heat transfer and MHD flow through semi-porous cylindrical filters embedded in an impermeable region”, Chinese Journal of Physics, Vol.81, pp.9-25, Feb. 2023
- iii. Yogeswara Reddy P & Dr. G.S.S Raju, “Influence of magnetic field and radiation on heat and mass transfer Flow of nano fluid over an inclined vertical plate embedded in porous medium”.

DEPARTMENT OF PHYSICS

(HoD: Dr. Praveen Kumar R S, Email: praveenkumarrs@vemanait.edu.in, +91- 9845628519)

Major Areas of Research: Elastomers, Conducting Polymers and Nanocomposites and Optical Studies on Inorganic glasses.

Resource Persons: Dr. Praveen Kumar R S (Elastomers), Dr. Madhusudhan C K (Nanocomposites), Mr. Chowdareddy N (Optical Studies)



Research Scholars:

Presently one research scholars is pursuing Ph.D. on Optical Studies on Inorganic glasses under Kuvempu University.

| Research Scholar | Affiliation | Supervisor | Research Area | Current Status |
|------------------|--------------------|--------------------|--------------------------------------|------------------------------|
| Chowdareddy N | Kuvempu University | Dr. Ashok R Lamani | Optical Studies on Inorganic glasses | Comprehensive Viva completed |

Research Outcomes:

1. Papers Publish

- i. **R S Praveen Kumar, C K Madhusudhan**, Muhammad Faisal, K Mahendra, NarasimhaRaghavendra, V T Vasantha, “Polypyrrole (PPy) nanohybrids for corrosion inhibition applications” Colloid Journal, Vol.84(3), pp.364–373, Aug 2022.
- ii. **C. K. Madhusudhan**, K. Mahendra, Narasimha Raghavendra, M. Revanasiddappa, Muhammad Faisal, “Corrosion-resistant polypyrrole-banana carbon (PPyBC) nanocomposites for protection against electromagnetic interference: a green approach” Journal of Mater Sci: Mater Electron, Vol.33(3), pp.1366–1382. 33, Dec 2022.
- iii. **C. K. Madhusudhan**, C H Abdul Kadar, Muhammad Faisal, N Maruthi, Narasimha Raghavendra, BP Prasanna, KR Nandan, SR Manohara, M Revanasiddappa, “Multifunctional Polypyrrole/Multi-Walled Carbon Nanotube, Composite Material: Dielectric, Humidity Sensing and Broadband EMI Shielding Properties”, Journal of Polymer Science, Series B, Vol.63(3), pp. 280–290, June 2021.
- iv. **C K Madhusudhan**, K Mahendra, James Anupriya, N Gajendra, BS Nagaraja, Jayadev Pattar, NK Udayashankar, “Incorporation of graphite into iron decorated polypyrrole for dielectric and EMI shielding applications”, Synthetic Metals, Volume 267, Sept. 2020,
- v. **Chowdareddy N**, Ashok R Lamani , A.G. Pramod , G. Jagannath, K. Keshavamurthy, P. Ramesh, Dalal Abdullah Aloraini, AlJawhara . Almuqrin, M.I. Sayyed, B.S. Avinash, H.S. Jayanna, Hamad Syed, S. Venugopal Rao, "Tunable ultrafast near-infrared nonlinear optical properties of Eu³⁺ and silver nanoparticles doped alkali borate glasses", Infrared Physics & Journal of Technology, Vol,127, Dec. 2022
- vi. **Chowdareddy N**, Ashok R. Lamani, Sampath Chinnam, G. Jagannath, Dalal Abdullah Aloraini, Aljawhara . Almuqrin, M.I. Sayyed, H.S. Jayanna , K. Keshavamurthy, “Nonlinear refractive index enhancement of Nd³⁺ ions loaded borate glasses in the near–infrared region by silver” ,Optical Materials,Vol.142, August 2023,
- vii. **Chowdareddy N**, A shok R. Lamani, A.G. Pramod, Vadiraj B. Tangod, Aljawhara H. Almuqrin, M.I. Sayyed, H.S. Jayanna, G. Jagannath, S. Venugopal Rao, K. Keshavamurthy, "Photoluminescence enhancement of Nd³⁺ doped antimony borate glasses by inclusion of silver nanoparticles",Journal of Luminescence, Vol.262,October 2023.

2. Patent Filed:

- a) An advanced image processing technique for early detection of lung cancers and treating them through AL enabled nanoparticles by Dr. Madhusudhan C K - Application No: 202241036573 A
- b) Machine Learning approach to study and analyze: The characteristics of various nano materials along with molecular structures for utilizing crop disease treatment by Dr. Madhusudhan C K - Application No: 202241036718 A

DEPARTMENT OF CIVIL ENGINEERING

(HoD: Prof. Elavarasi V, Email: elavarasi@vemanait.edu.in, +91-9845030235)

Major Areas of Research: Construction materials & structures, Highway & Geotechnical engineering, and Environmental engineering and Geology.

Resource Persons: Dr. M. Prem Swaroup Reddy (Highway Engineering), Dr. Namratha V (Environmental Engineering).



Research Facilities Available

| | |
|----------------------------------|---|
| Concrete and Highway Engineering | A 100 Tonne Universal Testing Machine. Non – Destructive testing and Self-compacting concrete equipment. |
| Geotechnical Engineering | Test equipment for Triaxial, Direct shear test, Unconfined compression test, and California bearing ratio (CBR) test |
| Surveying | Total station. |
| Environmental Engineering | Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) incubator. Spectrophotometer and Flame photometer. |

Research Scholars:

Presently two research scholar pursuing part-time Ph. D. The details of Research Scholars are:

| Research Scholar | Affiliation | Supervisor | Research Area | Current Status |
|-------------------|----------------------|--------------------|-----------------------------------|-------------------|
| Mr. Munikrishna L | Bangalore University | Dr. H C Vajrappa | Hydrology, Remote Sensing and GIS | Thesis write up |
| Mr. Likhit M L | Christ University | Dr. J A Kollerathu | High Strength Concrete | Experimental work |

Research Outcomes:

Papers Published:

- i. Likhit, M L, Alex, J, “A Potential Review on Self-healing Material – Bacterial Concrete Methods and Its Benefits”, Proceedings of SECON’22. SECON 2022. Lecture Notes in Civil Engineering, Vol.284. Springer, Cham.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

(**HoD:** Dr. Ramakrishna M, Email: ramakrishna@vemanait.edu.in, +91-9686725572)

Major Areas of Research: Wireless Sensor Networks (WSN), Mobile Ad hoc Network (MANET), Internet of Things (IoT), Image Processing, Artificial Intelligence and Machine Learning.

Resource Persons: Dr. Ramakrishna M (WSN), Dr. Shilpa G V (Machine Learning)



Research Facilities Available

| | |
|------------------|--|
| IoT | Raspberry pi boards, pi camera, and sensors – moisture, temperature, gas, pH, etc. |
| WSN | Network simulator (NS)-NS2/ NS3. |
| Machine Learning | Anaconda navigator with Jupyter notebook. |

Research

Scholars:

The department has VTU recognized R & D Center. Presently 8 research scholars are pursuing part-time Ph.D. in different areas. The details of Research Scholars are:

| Research Scholar | Affiliation | Supervisor | Research Area | Current Status |
|------------------------|--------------------|--------------------|-------------------------------------|------------------------------|
| Prof. Mary Vidya R | Vemana IT | Dr. Ramakrishna M | Machine Learning | Comprehensive Viva completed |
| Prof. Rachitha M V | | | Machine Learning | Comprehensive Viva completed |
| Prof. Suma S | | | Image Processing & Machine Learning | Comprehensive Viva completed |
| Prof. Lakshmi Shrivani | | | AI & Machine Learning | Registered |
| Prof. Neelam Malyadri | Reva IT, Bengaluru | Dr. S Nandagopalan | MANET | Comprehensive Viva completed |
| Prof. Brundha Elci J | Vemana IT | | Machine Learning | Comprehensive Viva completed |
| Prof. Anu Jose | CMRIT, Bengaluru | | Machine Learning | Comprehensive Viva completed |

Research Outcomes:

1. Paper Publications:

- i. **M V Rachitha**, M. Ramakrishna, “MWSMO: Multi-objective Whale Slime Mold Optimization based Food Recommendation system for Diabetes patient using GAN Model”, International Journal of Information Technology, vol.5, pp. 2357-2363, 2023
- ii. **H S Naveen**, E. Saravana Kumar, P. Ramkumar, “Classification of COVID-19 with Belief Functions and Deep Neural Network”, SN Computer Science, vol.4(2), 2023
- ii. **Shilpa G V**, Shashikumar D R, “Emotional Analysis Using Hybrid Deep Learning”, Journal of Xidian University, vol.16(9), pp. 548 – 556, 2023
- v. **A Rosline Mary**, Kavitha P, “Automated Diabetic Retinopathy Detection and Classification Using Stochastic Coordinate Descent Deep Learning Architectures”, Materials Today Proceedings, vol.80(3), pp. 3333-3345, 2023
- v. **Rashmi R** Design & development of intelligent ambulance concept using AI-ML-IOT & human interface technologies, European Chemical Bulletin, vol.12(9), pp. 1248-1259, 2023

2. Book Published:

- i. Naveen H S published book “Cloud Computing”, in Amazon Kindle.
- ii. Naveen H S published book “Teach yourself Operating System”, in Amazon Kindle.
- iii. Gopalakrishna P published book “Python basics & beyond”, in Amazon Kindle.

3. Patent Filed:

- i. “A system for automated decision making using machine learning and method thereof” - Rashmi R and Kavitha Bai A S – Patent No. 202341018634.
- ii. “A system and method for intelligent analysis of medical data using ML classifiers and clusters with cloud computing” - Shilpa Reddy K and Roopalakshmi S. Patent No. 202311011855.

4. Patent Granted:

- i. with title “Algorithm for optimizing the placement of wireless sensors using machine learning” is granted, Chitra G Patent No. 202341032893 A.




5. Achievements:

- i. Rosline Mary was a reviewer for the esteemed International Journal of Computer Theory and Engineering. (Scopus Indexed)

6. Workshop Organized:

- i. “Deep Learning” workshop was organized by Shilpa Reddy K on 12-12-2022.
- ii. “Advance python for data science” workshop was organized by Dr. Ambareesh S in two batches from 3-1-2023 to 7-1-2023 and from 9-1-2023 to 13-1-2023.

Ph.D Awardee

| | |
|---|--|
|  | <p style="text-align: center;">Congratulations!!!</p> <p>Prof. Shilpa G V, awarded with Ph.D. degree from VTU for the thesis titled “Development and Analysis of Linguistic features for Web Personalisation” on 3rd May 2023.</p> |
|  | <p style="text-align: center;">Congratulations!!!</p> <p>Prof. Mamatha C R, awarded with Ph.D. degree from VTU for the thesis titled “Design of Energy Efficient Protocol for Mobile Ad hoc Networks”.</p> |
|  | <p style="text-align: center;">Congratulations!!!</p> <p>Prof. Rashmi R, awarded with Ph.D. degree from VTU for the thesis titled “Performance Analysis of Turbo Decoder for LTE Communication”</p> |

DEPARTMENT OF ELECTRONICS AND COMMUNICATION

(HoD: Dr. Parameshwara M C, Email: parameshwaramc@vemanait.edu.in, +91-9620902171)

Major Areas of Research: Low-power VLSI circuits and systems, Communication systems, Bio-medical image processing, Power Electronics Drives, Internet of Things (IoT), Artificial intelligence and machine learning.



Resource Persons: Dr. Chandra Shekar S M (Power electronics), Dr. Parameshwara M C (VLSI circuits and systems), Dr. Reddy Sudharshana K (Power electronics, Embedded systems and IOT), Dr. Suneeta (VLSI), Dr. Hemamalini G E (Image processing), Dr. Harshada J Patil (Sensors), Dr. Sunil H (Image processing), Dr. Girish N(Communication), Dr. Byra Reddy G R (Image Processing).

Research Facilities Available

| | |
|-----------------------|--|
| VLSI & HDL | Cadence EDA tools for VLSI frontend and backend design with verification. Generic process design kits and standard cell libraries: CMOS 180nm/90nm/45nm. Fin FET 18 nm technology nodes, Spartan-6 FPGA boards. |
| Communication Systems | Microwave wave generator: GUNN diode, Klystron oscillator, Ring resonator, Directional couplers, Power splitters, VSWR meter Antennas: Dipole, Patch, and Yagi Uda, OFC transceiver kits, Digital oscilloscopes: 20 MHz and 50 MHz. |
| Power Electronics | TEXAS instrument development kit F28335. Agilent 4- channel oscilloscopes: MSO 100MHz, DSO 500 MHz High frequency current probes, Agilent technologies DC regulated power supply ±25V, 1A. Agilent true RMS digital multimeter 1µV resolution. Agilent make arbitrary waveform generator. Logic power PICPROG5POD (Target board). |

Research Scholars:

The department has VTU recognized R & D Center, presently 5 research scholars are pursuing part time Ph.D. in various streams. The details of Research Scholars are:

| Research Scholar | Affiliation | Supervisor | Research Area | Current Status |
|---------------------|---|----------------------|---------------------------|----------------------------|
| Prof. Prathima A | Vemana IT | Dr. Parameshwara M C | VLSI circuits and systems | Course work under progress |
| Prof. Rekha R S | Govt. Engineering College, Chamarajanagar | | Communication systems | Completed |
| Prof. Shiva Kumar P | Vemana IT | | VLSI circuits and systems | Course work under progress |
| Prof. Rudresh T K | | | VLSI circuits and systems | Course work under progress |
| Prof. Indu M | Vemana IT | Dr. Suneeta | Power electronics | Course work under progress |

Research Outcomes:



1. Journal Publications:

- i. A Khan, **M C Parameshwara**, R Arya, “Defects of quantum dot cellular automata computing devices: An extensive review, evaluation, and future directions”, *Microprocessors and Microsystems (Elsevier)*, Vol. 101, Sept. 2023.
- i. R S Rekha, **M C Parameshwara**, Veerendra Dakulagi, “Modified LMS Beam former for Interference Rejection”, *Wireless Personal Communications (Springer US)*, Vol. 129, Issue 3, pp.2199-2211, March. 2023.
- ii. R S Rekha, **M C Parameshwara**, Veerendra Dakulagi, “A Novel Adaptive Beam forming Technology for Mobile Communication”, *IETE Journal of Research (Taylor & Francis)*, Vol. 129, Issue 3, pp.1-8, March 2023,.
- iii. **Hemamalini**, “Real time Automated Attendance Monitoring System” *Journal of Design Engineering*, Vol. 11, Issue 9, pp.11650-11656, Nov. 2022.
- iv. **G R Byra Reddy**, H. Prasanna Kumar, “Segmentation of Mammogram Images using Level Set with Cuckoo Search Optimization”, *Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization*, Taylor & Francis, Vol.11, Issue 3, pp.914-921, Sept. 2022.
- v. **Ankitha A**, "Night Surveillance Robot Control Using an Android App" *International Journal of Instrumentation and Measurement*, Vol. 7, Issue 8, page.32-35, Nov 2022,
- vi. Jhansi R, Rohith Pratiush, Sankalpa B Reddy, **Deepika D Pai**, "Advanced Smart Helmet" *IOSR Journal of Electronics and communication engineering*, Vol. 17, Issue 5, pp. 17- 23.
- vii. **Shruthi M**, Dr. Ezhilarasan Ganesanb , "A survey on Harmonic Reduction in an Inverter Fed variable speed drive using various pulse width modulation techniques" *Gradiva Review Journal*, Vol. 9, Issue 5, pp. 165 -168, May 2023,.
- iii. Akula Naveen , Anna Sai Samanvith , Dheeraj G , Girish V , **Ramya R**, "Evaluation and Implementation of traffic clearance for emergency application" *IJARSCCT*, Vol. 3, Issue 2, pp. 113-117, June 2023.
- ix. **Malathi V**, Gopalakrishna K, "Role and Efficacy of Deep Learning in Segmentation, Classification and Prediction of Brain Tumour" *web of science ZKG International*, Vol.8, Issue, pp.1657-167, June 2023,.
- x. **Sathyanarayana N**. Vehicle Type Classification Using Hybrid Features and a Deep Neural Network. *International Journal of Applied Metaheuristic Computing* Vol.13, Issue 1, 2022,
- xi. **Sathyanarayana N**, Anand M. Narasimhamurthy. Vehicle Type Detection and Classification Using Enhanced Relief Algorithm and Long Short-Term Memory Network, *Journal of The Institution of Engineers (India): Series B*, Vol. 04, pp. 485–499, Dec. 2022,
- xii. **Sathyanarayana N**, A Survey on Vehicle Detection and Classification for Electronic Toll Collection Applications. *Distributed Computing and Optimization Techniques, Lecture Notes in Electrical Engineering 903*, pp. 101-110, 2022.

| Patents Applied and Published | | | |
|-------------------------------|-----------------------|--|------------------------|
| Sl. No. | Name | Title of the project | Applied |
| 1 | Mrs. Malathi V | An Ultrasonic Transmission based underwater communication assembly with nominal noise. | Applied 07-jan-2023 |
| 2 | Dr. Harshadha J Patil | Prosthetic for Lower Extremity | Applied 18-Aug 2022 |

Ph.D. Awardee

Congratulations!!!

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|---|---|
|  | <p>Mr. Byra Reddy G R awarded with Ph.D. from VTU, Belagavi, for the thesis titled “Early Detection of Breast Cancer Using Multimodality Analysis” on 28/06/2023, under the supervision of Dr. Prasanna Kumar H, Professor & Chairman, Dept. of Electrical Engineering, UVCE, Bengaluru-560001.</p> |
|  | <p>Mrs. Chinna V Gowdar awarded with Ph.D. from VTU, Belagavi, for the thesis titled “Design and Performance Analysis of Arithmetic Circuits at Submicron Level for Error Tolerant Applications” on 29/07/2023, under the supervision of Dr. Parameshwara M C, Associate Professor, Dept. of Electronics and Communication Engineering, Vemana I. T., Bengaluru-560034.</p> |

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

(HoD: Prof. Rajanna M, Email @: rajannam@vemanait.edu.in, +91-9886443318)

Major Areas of Research: Wireless Sensor Networks, MANET, IoT, Image Processing, Artificial Intelligence and Machine Learning.

Resource Persons: Dr. S. Nandagopalan (Data Mining and Image Analysis).



| Research Facilities Available | |
|-------------------------------|---|
| IoT | Raspberry pi boards: includes pi camera, and sensors (to detect moisture, temperature, gas, pH, etc), and are well suited to DIY IoT devices |
| WSN | Network simulator (NS)-NS2/ NS3: provides substantial support for simulation of different protocols over wired and wireless networks. |
| Machine Learning | Anaconda navigator with Jupyter notebook: open-source web application that allows you to create and share documents that contain live code, equations, visualizations, and narrative text |

Research Scholars:

The details of the research scholars are:

| Research Scholar | Affiliation | Supervisor | Research Area | Current Status |
|----------------------|-------------|--------------------|------------------|------------------------------|
| Prof. Brundha Elci J | Vemana IT | Dr. S Nandagopalan | Machine Learning | Comprehensive Viva Completed |
| Prof. Anu Jose | CMRIT | Dr. S Nandagopalan | Machine Learning | Comprehensive Viva Completed |

Research Outcomes:




1. Paper Published:

- i. **Sathyanarayana M**, “A survey on Vehicle Detection and Classification for Electronic Toll Collection Applications”, Vol.903 Springer Lecture notes in Electrical Engineering, Sept 2022,
- ii. **Sathyanarayana N**. Vehicle Type Classification Using Hybrid Features and a Deep Neural Network. International Journal of Applied Metaheuristic Computing Vol.13, Issue 1, 2022,
- iii. **Sathyanarayana N**, Anand M, Narasimhamurthy. Vehicle Type Detection and Classification Using Enhanced Relief Algorithm and Long Short-Term Memory Network, Journal of The Institution of Engineers (India): Series B, Vol. 04, pp. 485–499, Dec. 2022,

2. Achievements:

- i. All the teaching faculty of the department have successfully completed “ Energy Literacy Training”, an initiative by AICTE in association with Energy Swaraj Foundation to promote awareness on significance of energy saving and its outcome. Dr. Sathy
- ii. sathyanarayana N has successfully completed training of 160 police personnel in two batches on “Radio theory” at Karnataka State Police - Wireless training school, Audugodi.

Ph.D. Awardee

| | |
|---|---|
|  | <p style="text-align: center;">Congratulations!!!</p> <p>Mr. Rajanna M awarded with Ph.D. from VTU, Belagavi for the thesis titled “Energy Efficient Routing Protocol for Multi Sink Wireless Sensor Networks” on 24th February 2023 under the supervision of Dr. Shiva Murthy G, Assoc Prof, Dept of MCA/CSE, Center of PG Studies, VTU, Muddenahalli and Co- Supervisor - Dr. Varaprasad G, Professor, On Lien as Director, NBA, New Delhi, BMS College of Engineering, Bengaluru.</p> |
|  | <p style="text-align: center;">Congratulations!!!</p> <p>Sathya Narayana N awarded with Ph.D. from VTU, Belagavi, for the thesis titled “Computer Vision based Vehicle Classification with specific focus on the Indian context”, on 24th February 2023 under the supervision of Dr. Anand M Narasimha Murthy, Professor, Dept. of Data Science Engineering, International School of Engineering, Bengaluru-560102.</p> |
|  | <p style="text-align: center;">Best Project!!!</p> <p>Project Titled “Exoskeleton Arm” from our Students Mr. Muhammed imaan & Mr. Muteer ur rehaman Guided by Dr. Sathyanarayana N best project of the year 2022-23 by Karnataka State Council for Science and Technology (KSCST) in the 46th series of student project programme, a state level Seminar & Exhibition held at Alva’s Institute of Engineering and Technology, Moodubidire on 11th and 12th August 2023.</p> |

DEPARTMENT OF MECHANICAL ENGINEERING

(HoD: Dr. Lokesh G Reddy, Email: lokeshgreddy@vemanait.edu.in, +91-9448694378)



Major Areas of Research: Impact engineering, Cellular materials, Lattice structures, Alternative fuels, Heat transfer through porous medium, Composite materials.

Resource Persons: Dr. Vijayasimha Reddy B G (Cellular materials), Dr. Lokesh G Reddy (Natural composites), Dr. Aparna B (Heat Transfer), Dr. Subramanyam J (Nano-structured thermo-electric materials). Dr. Mujeeb Pasha (Impact Engineering), Dr. Kiran Kumar N (Nanomaterials)

Research Facilities Available

| | |
|---|--|
| Drop Weight Testing | Indigenously developed to study the impact energy absorption characteristics of materials and structures under low-velocity impact up to 10 m/s. |
| Ballistic Impact Gas Gun Setup | Indigenously developed to test impact behavior (Penetration, Perforation, and Indentation) of different materials and structures under impact loading with bullet impact velocity up to 50 m/s. |
| Split Hopkinson Pressure Bar Setup | Indigenously developed to determine material properties (Young’s Modulus, Yield Strength, etc.) at high rates of strain in the range of 10 ² to 10 ⁴ /s. |
| Computerized Multi-fuel Diesel Engine Rig | To study the effect of fuel injection pressure and its timing on the performance, emission, combustion, and heat release rate for different bio-diesel blends of various alternative fuels. To evaluate the performance parameters like BP, BSFC, and efficiency. To measure exhaust gas emissions such as UBHC, CO and Nox. |
| Computerized Wear Testing Machine | Used to study the wear properties of different materials against a standard surface with a speed range from 200-2000 rpm. |
| Universal Testing Machine (UTM) | Used to carry out tensile, compression, shear, bending tests, etc, and to study the mechanical properties of materials such as Young’s modulus, yield strength, compressive strength, bending strength, etc. under quasi-static loading conditions up to 400 kN. |

Research Scholars:

The department has VTU recognized R & D Center, presently 4 research scholars are pursuing part-time Ph.D. in different fields. The details of Research Scholars are:

| Research Scholar | Affiliation | Supervisor | Research Area | Current Status |
|-----------------------|-------------|---------------------------|--|-----------------------|
| Mr. Ashok Kumar C N | Vemana IT | Dr. Vijayasimha Reddy B G | Impact Energy Absorption of Metallic and Polymeric Lattice Structure | Thesis preparation. |
| Mrs. Meenalochani K S | | Dr. Vijayasimha Reddy B G | Characterization of palm leaves fibre reinforced composites | Course Work completed |
| Mr. Hemanth Kumar P | External | Dr. Aparna B | Heat Transfer through Porous Medium | Course Work completed |
| Mr. Tippeswamy | GEC Haveri | Dr. Arun K V | Material Characterization | Thesis Preparation |

Research Outcomes:

1. Journal Publications:

- i. **C. N. Ashok Kumar, B.G. Vijayasimha Reddy**, “Impact Energy Absorption characteristics of 3-D printed AlSi10Mg TPMS Gyroid metallic structures”, European Chemical Bulletin, Vol.12, Special Issue 5, pp.1446-1452, May 2023.
- ii. R M Shabbir Ahmed, Banakara Nagaraj, **N Kiran Kumar**, S G Sujith Kumar & Amithkumar Gajakosh “A comparative study on Abrasive wear behavior of TiB₂/Graphite reinforced cast and hot rolled Al7075-based hybrid MMCs”, J. Inst. Eng. India Ser. D, June 2023.

2. Book Chapter:

- i. Development, Properties and Industrial Applications of 3D Printed Composites, Jan 2023. DOI: 10.4018/978-1-6684-6009-2.ch014.

3. Patent Filed

- a) “ UI/Chat-based automated design, analysis, simulation, design optimization, and g-code generator software for subtractive and additive manufacturing for industrial applications” filed by Dr. Loksha G, Raghunath Reddy M, Deepak M K, Dhanush D B and Mukul Manohar S, No. 202341039405 A.
- b) “Impactor Load Releasing Device In A Drop Weight Testing Machine” filed by Dr. Vijayasimha Reddy B G, Dr. Mujeeb Pasha, Dr. Loksha G.

Ph.D. Awardee

| | |
|--|---|
|  | <p style="text-align: center;">Congratulations!!!</p> <p>Prof. Mujeeb Pasha, awarded with Ph.D. from VTU, Belagavi, for the thesis titled “Impact Energy Absorption of Aluminium Tubes under Axial Compression” on 1st August 2023 under the supervision of Dr. Vijayasimha Reddy B G, Professor & Principal, Vemana Institute of Technology, Koramangala, Bengaluru.</p> |
|  | <p style="text-align: center;">Congratulations!!!</p> <p>Prof. Kiran Kumar N, awarded with Ph.D. from VTU, Belagavi, for the thesis titled “Mechanical & Wear Behaviour of Micro & Nano Al₂O₃ Particulated Al-Si Alloy Metal Matrix Composite” on 1st August, 2023 under the supervision of Dr. B. N. Sarada, Professor of BMS College of Engineering and Dr. P. L. Srinivasa Murthy of BNMIT, Bengaluru.</p> |

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

(HoD: Dr. Kantharaju H C, Email: kantharajuhc@vemanait.edu.in, +91-9449129640)

Major Areas of Research: Wireless Sensor Networks (WSN), Mobile Ad hoc Network (MANET), Internet of Things (IoT), ImageProcessing, Artificial Intelligence and Machine Learning.



Resource Persons: Dr. Kantharaju H C (WSN), Dr. Shilpa G V (Machine Learning)

| Research Facilities Available | |
|-------------------------------|--|
| IoT | Raspberry pi boards, pi camera, and sensors – moisture, temperature, gas, pH, etc. |
| WSN | Network simulator (NS)-NS2/ NS3. |
| Machine Learning | Anaconda navigator with Jupyter notebook. |

Research Scholars:

The department has VTU recognized R & D Center, presently one research scholars are pursuing part-time Ph.D. in different fields. The details of Research Scholars are:

| Research Scholar | Affiliation | Supervisor | Research Area | Current Status |
|-----------------------|-------------|--------------------|------------------|----------------|
| Ms. Lakshmi Sravani G | VTU | Dr. M. Ramakrishna | Machine Learning | Registered |

Research Outcomes:

1. Paper Published:

- i. **Kantharaju H C**, Ambareesh S, Sakthivel, "A novel Fuzzy TOPSIS based Hybrid Jaratt Butterfly Optimization for Optimal Routing and Cluster Head Selection in WSN", Peer to Peer Networking Journal, Vol.16, Issue 4, PP.2512-2524, 2023
- ii. **Kantharaju H C**, V V Apurva, B. Gopinathan, A. Nallathambi, "A Novel Efficient Security Verification Technique based on Service Package Identifier in Wireless Mobile Ad-Hoc Networks", ICTACT Journal on Communication Technology (IJCT), Vol.9, Issue 17, Pp.2907–2912, 2023.
- iii. **Kantharaju H C**, G. Rohini, B. Gopinathan, Sangeetha Krishnan, "Efficient Energy-Efficient Cluster Head Selection in MANETs using Firefly Algorithm" ICTACT Journal on Communication Technology (IJCT), Vo.9, Issue 17, pp. 2933 - 2938, 2023.
- iv. **Harish. M**, Kumar, Menakadevi, "A Novel Modified Deep Belief Network for Identification and Classification of the Rose Rosette Disease" Journal of Environmental Protection and Ecology, Vol.24, Issue 4, pp.1175-1185, 2023.
- v. **Lavanya K**, Mala B A, Saranya C, "AI Neural Link for Human Storage and Processing", International Journal of Trendy Research in Engineering and Technology, Vol.7, Issue 2, pp.32-37, 2023.

2. Patent Filed:

- i. **Dr Kantharaju H C**, "Robot based on Chatbot program for guiding and Providing Real Time Conversation With User",
 Date of Filing Application: 17.06.2023 Application No.: 388555-001
 Date of Publication: 12.09.2023 Serial No:143705

3. Book Chapter:

- i. **Kantharaju H C**, Ramaswamy, N. Bindu Madhavi, Haripriya M.P, "8: Meta Learning through ensemble approach: bagging, boosting, and random forest strategies" DOI: <https://doi.org/10.1515/9783111323749-008>

REPORT ON PROJECT EXHIBITION AVISHKAR 2023

The 18th ISTE Karnataka State Level student Convention was jointly organized and conducted by the ISTE Karnataka Section, IEEE Bangalore section and the Vemana Institute of Technology, Bangalore in association with Visvesvaraya Technological University, Belagavi, with the theme “Innovative Technologies for Sustainable Future” on 6th May 2023. The convention intended to provide opportunities for students to showcase and share their innovative skills in addressing challenges of real time applications related to society and sustainable future using cutting edge technologies. The skillset, team work plays a lead role in the global arena. The Inter college project exhibition was a success, and the brief report on the proceedings is as below.



| Department | Project Received |
|---------------------------------|------------------|
| CS/IS/IT and allied branches | 45 |
| Electronics and allied branches | 39 |
| ME Engineering. | 14 |
| Civil Engineering | 10 |

The following Students were awarded 1st and 2nd Cash Prizes in respective Streams.

| Program | Project Batch | Project Title | College | Award |
|--------------------------------------|------------------|---|--|--------|
| Computer Science and allied branches | VIT/ISTE/S1/PE1 | Driver Safety On Roads: Innovative Drowsiness and Alcohol Detection System With GPS Location Tracking | Atria Institute of Technology | First |
| | VIT/ISTE/S1/PE13 | Automated Safety Surveillance System | Rao Bahadur Y Mahabaleswarappa Engineering College | Second |
| | VIT/ISTE/S1/PE27 | Anti-theft Security System | Vemana Institute of Technology | Second |
| Electronics and allied branches | VIT/ISTE/S2/PE31 | Medical bed with integrated toilet system. | Mangalore institute of technology. | First |
| | VIT/ISTE/S2/PE15 | Upper limb pressure measuring device using sensors. | The Oxford College of engineering | Second |
| | VIT/ISTE/S2/PE13 | Analysis of channel estimation techniques for MIMO wireless channel models. | RNS institute of technology | Second |
| Mechanical Engineering | VIT/ISTE/S3/PE13 | Automated Surveillance Drone. | Vemana Institute of Technology | First |
| | VIT/ISTE/S3/PE0 | Design and Construction of an Integrated Domestic Organic Waste Composting device. | KSIT, BANGALORE | Second |
| CIVIL ENGINEERING | VIT/ISTE/S4/PE10 | Construction & demolition waste paver block (Eco friendly) | Govt. SKSJTI | First |
| | VIT/ISTE/S4/PE01 | Hospital Waste Water Treatment using Carbon Nano Particle. | Govt. SKSJTI | Second |

INSTITUTE LEVEL R & D ACTIVITIES

To support and encourage faculty and students in various R & D activities, entrepreneurship, start-up, IPR filing, etc., the institute has following additional facilities.

1. Institutional Professional Body Membership:

The institute is a member of various professional bodies and constantly organizes various technical events such as student chapter activities, technical debates, essay writing, awareness on advancements in technologies.

- Indian Society for Technical Education (ISTE)
- Institute of Electrical and Electronics Engineers (IEEE)
- The Institute of Engineers (India) (IEI)
- Computer Society of India (CSI)
- National Digital Library of India (NDLI)
- Board for IT Education Standards (BITES)

2. E- Resources:

The following is the list of e-resources subscribed by the institute:

- Elsevier-Science Direct e-Journals
- IEEE-Proceeding Order Plan (POP)
- Taylor and Francis e-Journals
- Proquest-Database
- MAP Systems (Digital Library Platform and Remote Access Solution)
- Net Analytiks (LANQUILL)
- Turnitin (Similarity check tool)
- Emerald Business Indian Cases (Management)
- Mint Books (Subscription basis)

3. Start-Ups:

The institute has an IIC-MHRD, Govt. of India approved MSME Business incubation center and following is the list of start-up incumbents established:

| Start-up | Work Details | Number of Vemana IT Student Interns |
|---------------------|--|--|
| Lakshya Space | Lakshya Space involves in design and developments of drones for Agriculture Applications | 59 |
| Texnotrait Solution | Basically, a software company presently working on CHATBOTS and humancomputer interface to enable human life interaction | 18 |
| Zethic Technologies | Zethic is a creative development hub for building scalable and business ready Web and Mobile applications. Presently working on Make in India home and hotel automation system | 8 |

4. Industry – Institute Collaboration:

The institute actively collaborated with various industries. Through the industry, the institute is constantly organizing various technical talks in emerging technologies, internship trainings, FDPs, etc., for the benefit of students as well as the faculty. The details as follows:

| Industry | Collaboration Initiative | Outcome | Department |
|---|---|--|----------------------------------|
| Mouktik Consulting Services Pvt. Ltd. Bengaluru | “Skilling Digitally Excellent Communities” Machine Learning with Python | 4 th Sem students got trained in this program. They learnt Python programming and Machine Learning concepts which helps the students for their Internship programs and Placement as well. | Computer Science and Engineering |
| Magic Bus India, Bengaluru | AWS RESTART PROGRAM | 70 students got trained on AWS which includes globally recognized certification. Students are in the process of placement. | |

| | | | |
|--|--|--|---|
| ExcelR Edtech Pvt.Ltd | Mobile App development with Flutter for Android and iOS | The program is started on 25 th October, 2023 and it is in progress. | |
| Consortium of electronic industries of Karnataka(CLIK) Bengaluru | Internships & Placements | 10 final year students completed their internship at CLIK associations. | Electronics & Communication Engineering |
| Appose engineering Pvt.ltd | Internships & Placements | Two students are recruited for placements. | |
| Rubrix Pvt. Ltd. Bengaluru | “Machine learning and Artificial Intelligence” | 4 th Sem and 7 th semester students got trained in the area of AI&ML and Data science which helps the students for their Internship programs and Placement as well. | Information Science and Engineering |
| Rubrix Pvt. Ltd. Bengaluru | “Assessment for internship enrolment as per company norms” | 58 students were attended the selection process. Three Students of 7 th semester got selected in the Internship program. | |
| Rubrix Pvt. Ltd. Bengaluru | “Confidential Computing :the new era of cyber security” | The webinar is conducted on 11 th October, 2023 for 4 th semester students from which students were able to understand the importance of Ethical and security hacking. Many students were interested to enrolled for certification course which will help them for placements. | |
| DevMind | “Internship Program Orientation” | The webinar is conducted on 21 th October, 2023 for 4 th semester students. It provides framework on VTU internship theme i.e Innovation Entrepreneurial & Societal. | |

INSTITUTE LEVEL ACHIEVEMENTS

1. Grant of accreditation (2021-24) by National Board of Accreditation (NBA) to the following courses:
 - Computer Science & Engineering
 - Electronics & Communication Engineering
 - Information Science & Engineering
 - Mechanical Engineering
2. Establishment of Centers of Excellence & IP Cell:
 - Vemana Toyota Kirloskar Center of Excellence
 - Vemana - MHRD Institute Innovation Cell
 - Vemana - KSCST IP Cell
3. List of Memorandum of Understanding (MoU):
 - Drone Clusters with Lakshya Space LLP
 - Peenya Industrial Association
 - Electronics City Industries Association (ELCIA)

| UG PROGRAM |
|---|
| <ol style="list-style-type: none">1. COMPUTER SCIENCE & ENGINEERING2. INFORMATION SCIENCE & ENGINEERING3. ELECTRONICS & COMMUNICATION ENGINEERING4. MECHANICAL ENGINEERING5. CIVIL ENGINEERING6. ARTIFICIAL INTELLIGENCE & MACHINE LEARNING7. COMPUTER SCIENCE & ENGINEERING (DATA SCIENCE) |
| VTU RECOGNIZED RESEARCH CENTERS |
| <ol style="list-style-type: none">1. ENGINEERING CHEMISTRY2. ENGINEERING MATHEMATICS3. ELECTRONICS & COMMUNICATION ENGINEERING4. COMPUTER SCIENCE & ENGINEERING5. MECHANICAL ENGINEERING |

CET CODE: E092

COMED-K CODE: E145

WEBSITE: WWW.VEMANA.IT.EDU.IN