Go, change the world

RV College of Engineering ®

(Autonomous Institution affiliated to VTU, Belagavi)
Approved by AICTE, New Delhi

Centers of Excellence

&

Centers of Competence

www.rvce.edu.in
principal@rvce.edu.in
RV Vidyanikethan Post, Mysuru Road, Bengaluru - 560059

About RVCE

RV College of Engineering (RVCE) established in 1963 is one of the earliest self-financing engineering colleges in the country. The institution is run by Rashtreeya Sikshana Samithi Trust (RSST) a not for profit Trust. RVCE is an autonomous college. Currently the institution offers 15 Bachelors, 14 Master Programs and all the Other departments have a Research Centre, affiliated to Visvesvaraya Technological University (VTU) Belagavi. The institution has set itself Vision leadership in Quality Technical Education, interdisciplinary Research and Innovation, with the focus on Sustainable and Inclusive Technology.

Recent awards and achievements include - Ranked 89th in the Country by National Institutional Ranking Framework (NIRF: 2020-21), QS-IGUAGE -Diamond University Rating (2021-2024), EduFuture Excellence Award -Best Private Engineering University (South) by Zee Digital, “Engineering College of the Year-2022” by the Higher Education Review Magazine, Ranked 13th in the country & 2nd in Karnataka - IIRF Ranking (2022), Ranked 6th among the top 10 of 100 Pvt. Engg. Colleges in the Country by Education World Magazine-22. Ranked 1501+ in Times Higher Education World University Rankings-2023. Ranked 801+ in Computer Science and 1001+ Rank in Engineering category in THE World University Rankings-2023. “Excellent” rating in ARIIA Ranking-2021 and NPTEL (Local Chapter) “AA” Rating & Max. No. of NPTEL Stars. Eleven UG programs and eligible M.Tech & MCA programs have been accredited by NBA multiple times.

The institution has to its credit over 1500 National and International Journal publications, filed 52 patents, 45 published patents, 15 granted patents, completed sponsored research and consultancy projects worth Rs. 12.5 crores in the last three years. The institution has established 24 Centres of Competence / Excellence in the campus. The college currently has student strength more than 5500, faculty strength of above 350, technical administrative staff of about 225 and around 350 research scholars are pursuing Ph.D. The students have won awards and accolades in national and international competitions.

Contact Details:

Dr. K. N. Subramanya
Principal
R V College of Engineering
R V Vidyanikethan Post
Mysuru Road, Bengaluru - 560059
Ph : 91 - 080-681881000/8111-12
Fax: 91 - 080-6717 8011

www.rvce.edu.in

principal@rvce.edu.in

Interdisciplinary Research & Innovation – A Preamble

Interdisciplinary research is a type of study or research that draws from two or more disciplines in order to gain a more well-developed perspective or discover something new. Interdisciplinary research is growing in popularity and is increasingly seen as essential. Multiple perspectives on research challenges will often lead to better outcomes. In order to streamline and undertaking focused research, the institution has followed the following approach for execution of funded projects and industrial consultancy. Also to develop competency in students and faculty.

1. Identifying Thematic Areas of Research: Carrying out SWOC analysis of the institution and aligning goals inline with Thrust areas of Govt. & Industry is helping identifying need based areas of research. Thrust areas are identified through road maps, govt. policy documents, Vision 2035, UN SDG 2030, funding agency requirements and such others.
2. Aligning with existing infrastructure and identifying new infrastructure needed: The institution has separate PG / Research budget to cater to new equipment's and seed funding for students and faculty. Many companies and funding agencies have helped in establishing physical infrastructure and state of the art equipment and software are provided over a period of time.
3. Assigning Team: Based on the specialization and competency of the faculty, various interdisciplinary teams are formed to undertake need based research, execute projects and consultancy assignments.
4. Developing Modules and providing training: The newer areas of science and technologies need learning through training from experts. Based on the need of the faculty, training in thematic areas are provided through institutional funding and providing seed funding for initial experimentation & Simulation, wherever needed. Mentoring by Industry & Research Experts in the thematic areas are also taken up for better understanding of the need and execution.
5. Executing work as per standards: Funding agencies and industries expect deliverables in terms of products, processes and systems, which are scalable. Efforts are made to execute the projects and consulting work based on the goals set and measured through publishing in peer reviewed journals, developing prototypes and and obtaining Patents and copy rights.
6. Reporting periodically & Scale Up the CoE / CoC: Documentation of the work carried out and submitting to the agencies is a continuous assignment and also helps future work to be undertaken. The whole exercise of interdisciplinary research and innovation is also helping in developing incubation center and Start-ups for commercialization of IPs, and alternate Revenue generation for sustainability.

The above approach is adopted to make sure learning happens to UG / PG / PhD students in a expected way. The students are understanding the advantages of working in interdisciplinary way. As an offshoot of this exercise, many interdisciplinary and innovative courses / internships / projects / electives / skill labs are developed. This also meets the requirements of NEP -2020 and increasing the employment opportunities for students.

Hope this approach and effort helps the institution, in particular and Nation, in general in developing new products and systems for better economic development of the country.

Centers of Excellence

Centers of Competence

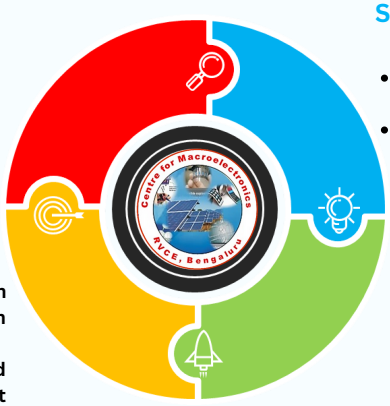
1. Macroelectronics

The CoE Macroelectronics is established in 2013 under TEQIP-II, sub-component 1.2.1 and is designated as Inter-Disciplinary Research Center (IDRC). The focus of the IDRC is on thin film deposition, synthesis, and characterization of emerging materials for novel applications including wearable electronics, flexible displays, sensors, energy harvesting nanogenerators, tribological functional coatings, e-skin, and biological devices. Emphasis is given to sustainable next-generation IoT sensors, organic solar cells, large-area printed & flexible electronics material growth, scalable processes, and product development.

Areas of Expertise

Thin Film Fabrication & Characterization

- State-of-the-art in-house fabrication and characterization facility
- Development of novel materials and devices
- Tribological, optical, anti-reflection, and protective coatings



Sensor Development & Prototyping

- Gas sensors Fabrication and Testing
- Biological sensors and Testing Facility

Skill Development

- Training/Workshop/FDP on fabrication and characterization equipment
- Technology transfer, prototyping, and product development on smart materials, devices and sensors

Solar Cell -PV & Energy Harvesting Technologies

- Design and Development of A-Si/C-Si HiT Solar Cell
- Polymer-based Solar Cell
- Development of Piezoelectric, Triboelectric nanogenerator (TENG), MEMS, and Super Capacitor

Facility & Infrastructure

The IDRC has state-of-the-art indigenous fabrication & characterization facilities for material growth, thin film deposition, and device development including vaccum-based deposition, wet chemical processing, tribological, optical, and electrical characterization. Assistance to Ideation, prototyping, and product design are provided along with the consultancy services.

Fabrication Facility

Thin Film Fabrication

- PECVD Cluster Tool
- Thermal & E-Beam Evaporation
- Cathodic Arc Deposition
- RF/DC Sputtering
- Micro plotter
- Laser Mask Writer
- Spin Coater
- Electrospinning

Characterization Facility

Thin Film Characterization

- AFM/Raman/NSOM Microscope (WiTech Alpha 300-RAS)
- PerkinElmer FTIR Spectrophotometer
- LAMBDA™ 750 UV/Vis/NIR spectrophotometer
- XRD (MAXima_X XRD-7000)
- Hitachi Scanning Electron Microscope SU-100 and more..

Prototype Facility

Prototype to Product
Design thinking aspects of ideation, benchmarking to prototype, design and scalable product development facility

Simulation Tools

Process & Device Simulation
Different material process, structure, device, circuit and software's

COE - MACROELECTRONICS

Achievements

IDRC

Interdisciplinary Research Centre

Prototypes

Pentacene & metal oxide Sensor, ZnO & a-Si TFT, Methane sensor, LPG Gas sensor, Thin film acoustic sensor, a-Si & HiT Solar Cell

Equipment Designed & Developed

- Electro Spin Spray System (ESSY)
- Automated Flame Assisted Liquid Spray Pyrolysis Equipment
- LPG Gas Testing Chamber

Patents & Publications

Patented filed:7, Granted:5. 100+ publication in international and national journals and conferences.

Consultancy & Projects

12+ Crore ongoing and completed funded projects for various agencies such as DST, UGC, DRDO, NRB, VGST, CPRI.
4 Consultancy projects

Funding Agencies

विज्ञान एवं प्रौद्योगिकी मंत्रालय MINISTRY OF SCIENCE AND TECHNOLOGY सत्यमेव जयते

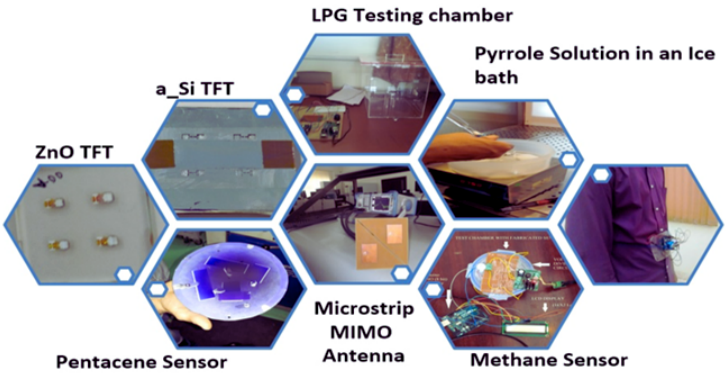
UGC University Grants Commission

DRDO

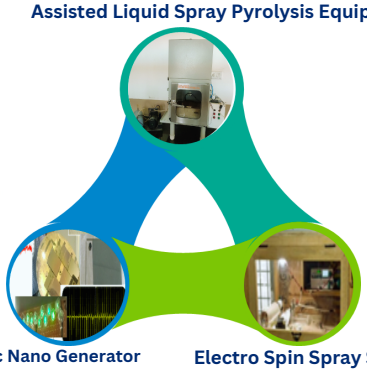
TEQIP

VGST

AICTE



Indigenously Developed Automated Flame Assisted Liquid Spray Pyrolysis Equipment



Turbo Electric Nano Generator (TENG)

Electro Spin Spray System (ESSY)

Activity & Research Collaboration

Internship

Training, summer internship, Workshop to Science and Engineering UG & PG Students.

Facility Access

The IDRC is connected with i-STEM portal, GoI. Any industry, researcher can use the facility with nominal usage cost

Industry Connect

Consultancy services, collaborative product development for market needs.

Projects

Research Collaboration with other institutions, PSU and research labs

Ideation & Prototype

Assistance to product design, prototype and development

Contact details

Dr. H N Narasimha Murthy
Professor, Dept. of ME
narasimhamurthyhn@rvce.edu.in
Ph No:+91-9901745089

Dr. Uttarakumari M
Professor, Dept. of ECE
uttarakumari@rvce.edu.in
Ph No:+91-9945336808

Dr. Ramavenkateswaran N
Assistant Professor, Dept. of ECE
ramavenkateswarann@rvce.edu.in
Ph No:+91-9986165427

2. Cognitive Intelligent Systems for Sustainable Solutions

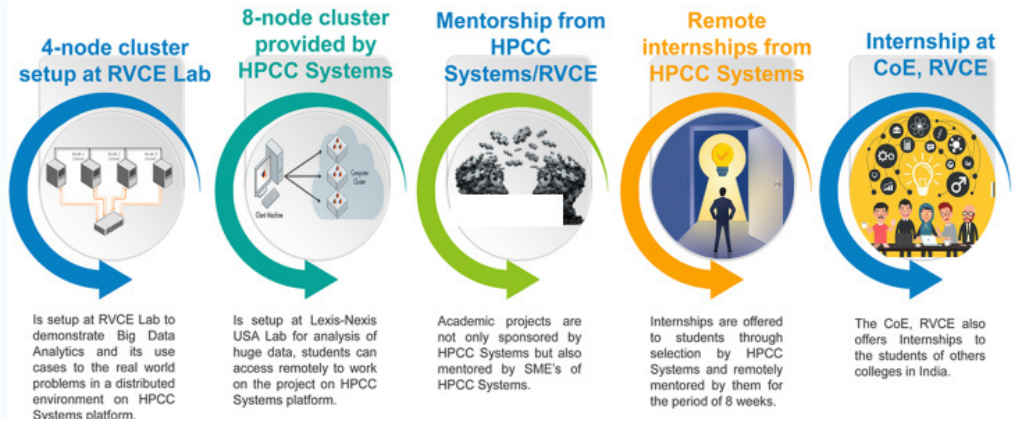
RVCE – HPCC Systems

RV College of Engineering in collaboration with HPCC Systems and LexisNexis Risk Solutions established CISSS in 2017. Funding research projects, and offering industry-based elective courses and internships to students are some of the motives for the collaboration. CISSS will emphasize on advanced interdisciplinary research activities in the area of Cognitive Intelligent Systems with assistive technologies to cater to the needs of industry and society. CISSS seeks collaboration with national and international institutes, partnerships with social institutions and industries to realize its goals.

Areas of Expertise

Facility & Infrastructure

The centre is well equiped with the necessary computational infrastructure and software tools.



Achievements

09 Research & Consultancy Projects worth 94,000 USD

08 Summer Internships worth 25,400 USD

12 Publications in Reputed Journals & conferences

Conferences, Workhops, and Hackthons

Activity & Research Collaboration

Research
open for collaborative academic research

Facility Access
Consultancy and Training

Industry Connect
Leverage HPCC Systems for Big Data Analytics

Projects & Internships
Offers projects and internship for students

Ideation & Prototype
Contribution to Open source HPCC Systems Community

For more details :

Contact details

Dr. Shobha G
Professor, Dept. of CSE (Data Science)
shobhag@rvce.edu.in
Ph No:+91-9480280273

Prof. Jyoti Shetty
Assistant Professor, Dept. of CSE
jyothis@rvce.edu.in
Ph No:+91-9900052901

3. Internet of Things
CISCO-RVCE

Develop employable human resource to meet the challenges in the field of IoT. Strengthen laboratories for training, design, implementation and maintenance. Establish a competence centre in research and innovation across various verticals of IoT. Create technology business incubation centre for IoT.

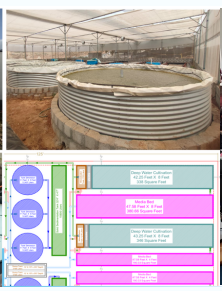
Areas of Expertise

- **Embedded Systems**
- **Networking and Cloud Computing (IaaS, PaaS and SaaS for IoT)**
- **Full Stack Application Development for IoT**
- **Analytics and Visualization**

Facility & Infrastructure

The centre was initiated with the support of CISCO in 2016-17 with a fund of 3 crores for 3 years. CISCO-RVCE-CoE-IoT has provided the necessary Infrastructure for different groups of faculties to create training programs, hackathons, makathons, and proof of concepts. Currently, 40 lakhs worth of sensors, actuators, development boards, and other devices are available across different groups of faculties.

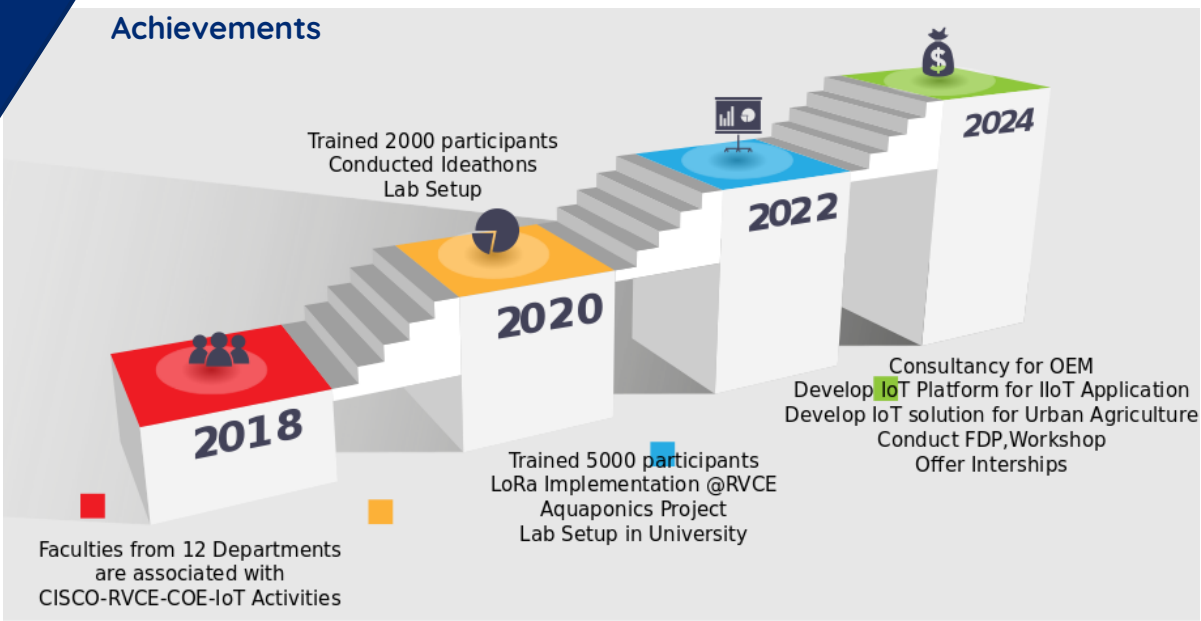
40 lakhs worth
Aquaponics facility to develop IoT platform for Controlled Environment agricutlrre



40 lakhs worth
IoT Kits and 10 lakhs worth Private Cloud Infra

11 lakhs worth
LoRa based infrastructure

Achievements

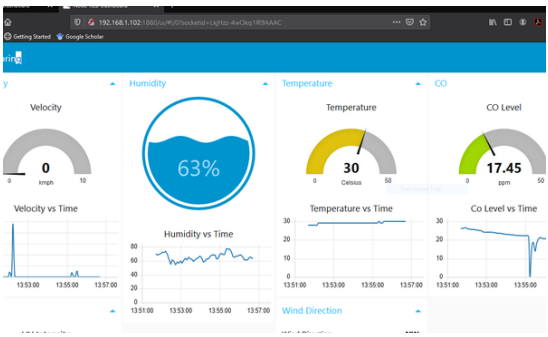


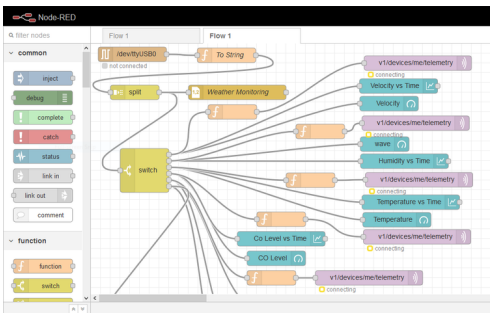
Activity & Research Collaboration

Training Programs
Faculty Development Programs

Internship

Product and Solution Development
IoT Platform Development
Industrial IoT Application Development





Contact details

Dr. Renuka Prasad B
Associate Professor, Dept. of MCA
renukaprasadb@rvce.edu.in
Ph No:+91-9901945674

4. Computational Genomics

Centre of Excellence - Computational Genomics is an integrated base set to provide solutions to challenges in the agriculture and healthcare research sectors.

The prime focus of the lab is to establish a robust facility in computational biology to provide efficient solutions to research challenges. The center also provides skill development training to students leading to enhanced research ability.

The lab is expertised is Drug design, safety profiling and formulation studies. It also provides an comprehensive bioinformatics solution to omics research. We are pioneering in machine learning aspects of genomics and drug discovery. We can support tools and database development.

Funding Agencies

Department of BioTechnology, Government of India

ICMR INDIAN COUNCIL OF MEDICAL RESEARCH Serving the nation since 1911

SERB DIA

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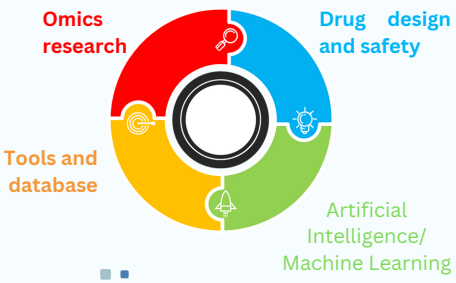
BANGALORE BIOINNOVATION CENTRE Sculpting the Future of Bioinnovation (A Government of Karnataka Undertaking)

Areas of Expertise



Collaborations with

PDBe Protein Data Bank in Europe

MERCK

wellcome sanger institute

University of Agricultural Sciences, Bangalore

Indian Institute of Science भारतीय विज्ञान संस्थान

Facility & Infrastructure

High throughput genome analysis

OMICS analysis

NGS, Meta-genomic, Proteomics and Meta-proteomics analysis

High throughput Drug screening

Drug Discovery

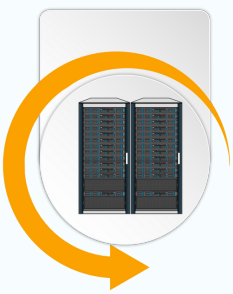
Screen millions of drug candidates to provide lead compounds and perform lead optimization

Software

Simulations

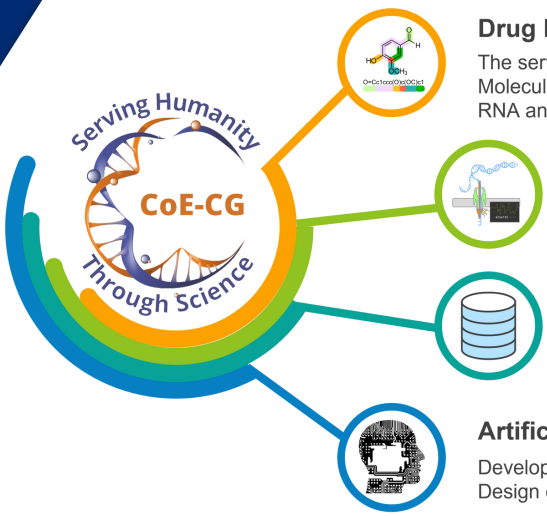
Open source and commercial software like Schrodinger, Omics box, J-OCTA, and MATLAB to name a few

Infrastructure



GPU and HPC

3 HPC and 4 NVIDIA GPU clusters, Storage server and G-Cloud suite



Drug Discovery

The service provided encompasses the *In-silico* Ligand design – Molecular Docking – MD simulations and Formulation studies. RNA and aptamer-based designs are performed.

OMICS research

Complete end-to-end OMICS research related to Genomics, Proteomics, Meta genomics, and Meta proteomics is performed

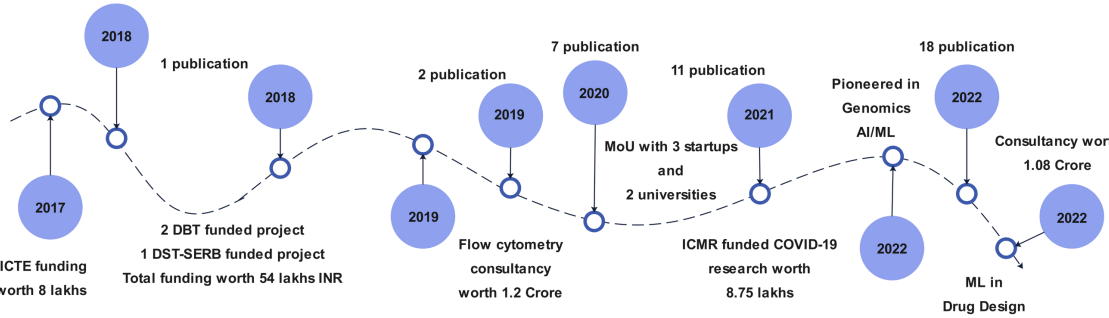
Tools and Database

Development of tools for analysis, plugins and databases for storage and management can be developed based on requiremer

Artificial Intelligence and Machine Learning

Development of ML models and prediction based on genomics data. Design of novel drug candidates based on ML models

Journey and Milestones



Activity and Research

Research

We are open to academic research collaboration and funding opportunities with shared IP

Internship

Students can apply for Internships throughout the year for a nominal fee

Consultancy

Pharmaceuticals and startups can outsource the work on for a pre-decided fee.

Ideation

Involvement with start-ups to Initiate new ideas for fee or shared IP

Contact details

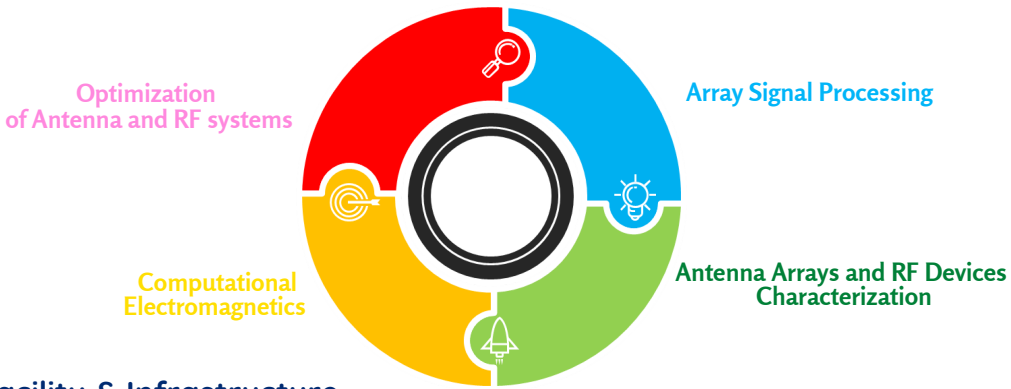
Dr. Vidya Niranjan
Professor and Head, Dept. of BT
vidya.n@rvce.edu.in
Ph. no:+91-9945465657

5. Smart Antenna Systems and Measurements

The centre of excellence in smart antenna systems and measurements specializes in the analysis, design, optimization and measurement of RF and microwave devices for wireless and defense applications. This facility is utilized for multiple activities such as:

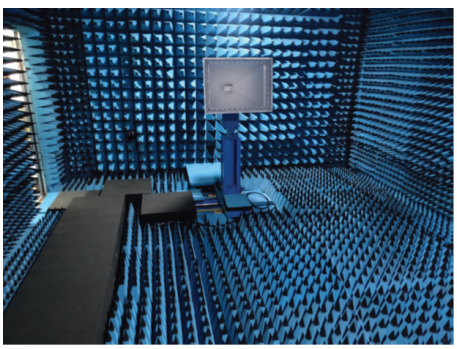
a. **R & D Activities: Design and Development of Antennas for cutting edge technologies**
b. **Lab Facility: Antennas and RF Devices Characterization**
c. **Student Internships and Faculty Training (In house/External)**
d. **Consultancy Activities: Design, Development and Characterization of Antenna and RF Systems**

Areas of Expertise



Facility & Infrastructure

a. EM Simulation Software
b. Anechoic Chamber
c. Vector Network Analyzer
d. RF Power Sensor
e. RF Cables and connectors
f. RF Phase Shifters for Beamforming



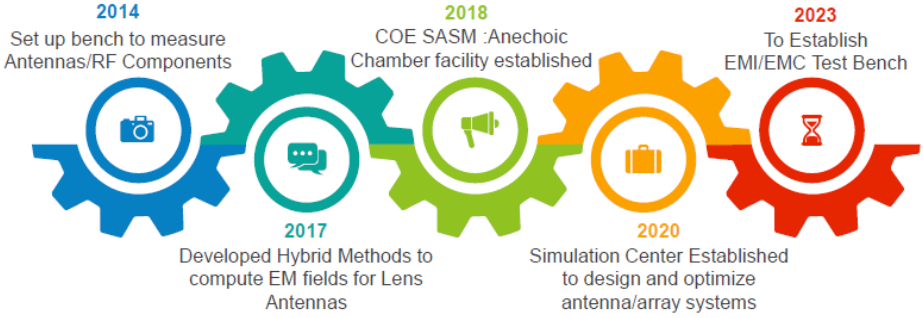
Anechoic Chamber operational up to 40GHz

Vector Network Analyser operational upto 40GHz

RF Power Meter - R&S®NRP-Z51

RF Phase Shifters for Beamforming

Achievements



Activities and Research

R&D Activates:

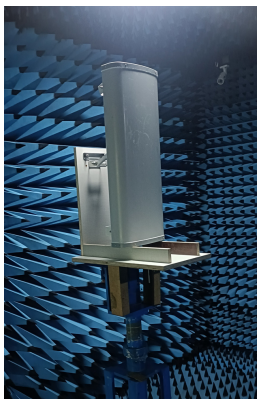
- Design and Development of Antennas and RF Systems
- Development of Hybrid Methods to compute fields of Antennas

Training & Internship Activities:

- Internship certificate with performance-based grading from Centre of Excellence in SASM and WavCom Pvt Ltd
- Invited talks from leading experts through IEEE APS/MTT/Comsoc .
- Faculty Developed Programme's i

Skills Imparted in COE-SASM

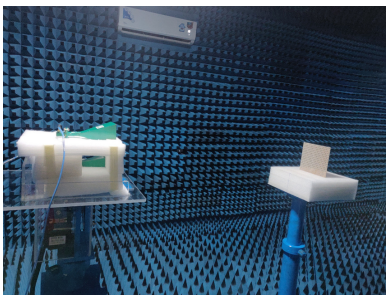
- Matlab Antenna Toolbox and Phased Array toolbox
- ANSYS HFSS- EM Pro SOLVER
- Cadence AWR & Keysight ADS
- LTspice software



5 G Base station Antenna Measured in COE-SASM

Characterization & Measurements:

- Characterization of Antennas and RF devices
- Measurements of S-parameters /Reflection/Absorption coefficients of Materials

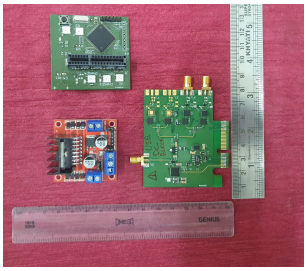


RADAR Cross Section Measured in COE-SASM

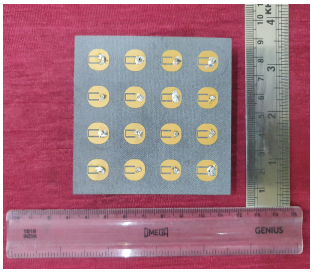
OUTCOMES

- PATENTS PUBLISHED-01
- RESEARCH PUBLICATIONS -40
- INTERNSHIPS- 100 STUDENTS COMPLETED
- 25+ PROTOTYPES DEVELOPED
- RESEARCH PROJECTS
  - TWO ONGOING PROJECTS.
  - 8 PROJECTS COMPLETED
- CONSULTANCY PROJECTS-
  - 2 ONGOING PROJECTS.
  - 5 PROJECT COMPLETED
- CONSULTANCY PROJECTS-
  - 2 ONGOING PROJECTS.
  - 5 PROJECT COMPLETED
- STUDENTS PROJECT: 25+ PROJECTS

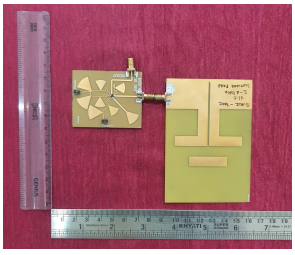
Prototypes Developed @ COE-SASM



RF-Beamforming Module



X-Band 4X4 Array Antenna



S-Band Active Antenna

Contact details

Dr. Geetha K S,
Vice Principal, RVCE
viceprincipal@rvce.edu.in
Ph No:+91-9900700990

Dr. Mahesh A,
Assc. Prof, Dept. of ECE
mahesha@rvce.edu.in
Ph No:+91-9886531812

Dr. Shushrutha K S,
Assc. Prof, Dept. of ECE
shushruthaks@rvce.edu.in
Ph No:+91-9964179197

Prof. M. Shambulinga,
Asst. Prof, Dept. of ETE
shambulingam@rvce.edu.in
Ph No: +91-9916292488

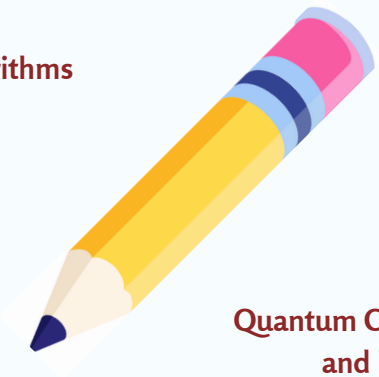
6. Quantum Computing

The CIRQuIT (Center for Interdisciplinary Research in Quantum Information and Technology) is a group of passionate students and faculty of RVCE. The group works under the Center of Excellence in Quantum Computing to explore the potential of quantum computing technologies and algorithms for solving the 21st-century problems of industry and society. The CoE works with the vision ***"To inspire young minds to take up research in Quantum Computing and develop viable solutions to real-world problems."***

Areas of Expertise

01 Quantum Algorithms

02 Quantum Machine Learning



03 Quantum-safe Cryptography

04 Quantum Communications and Hardware

Facility and Infrastructure

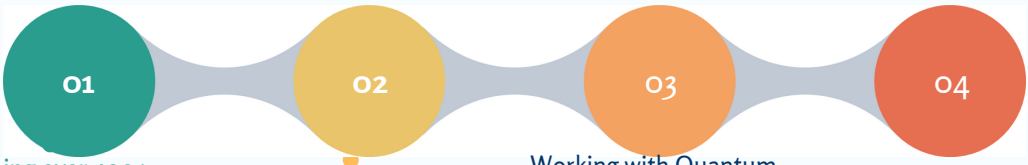
01 Expertise in developing quantum programs on the IBM-Quantum experiencevtechnology.

02 Researching Quantum Key Distribution(QKD) schemes applications in Cyber Security and Quantum Machine learning applications in Drug development

03 Quantum simulation experiences on Quantum Algorithms, Quantum Cryptography, Quantum Machine learning, and Quantum communication.

04 Training programs/Hands-on workshops for students and researchers on Quantum computing, Quantum mechanics, and Quantum mathematics.

Achievements



Training over 400+ quantum computing developers by the end of 2023

Offering project works on Quantum computing-based optimization problems.

Working with Quantum computing industries to take the technology to end users and solve some industrial problems.

Providing research guidance to scholars who want to work in Quantum Computing.

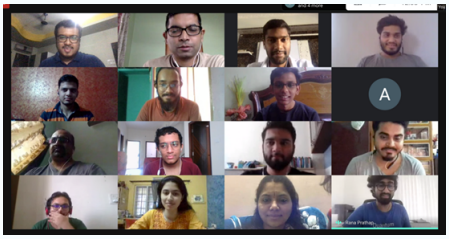
Activity and Research Collaboration

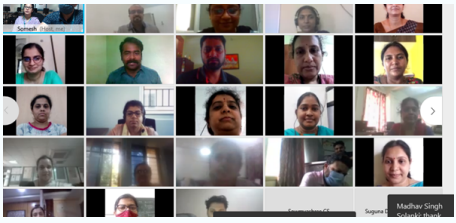
01 Conducted month-long industrial internships for students and research scholars.

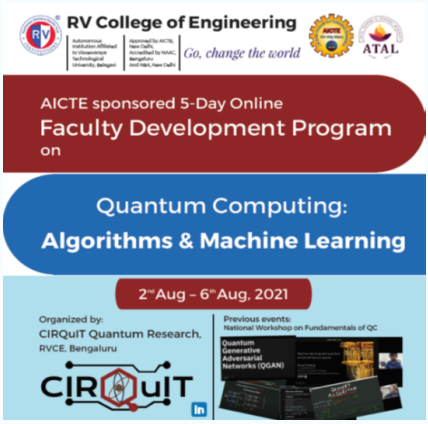
02 Faculty development programs and hands-on workshops at the National level, sponsored by AICTE, IEEE, and others.

03 Funded project on "Experimenting the BB84 protocol to secure Smart grid communications", sponsored by CySecK – Govt. of Karnataka.

04 Training and research collaborations with IBM.







Contact details

Dr. B. Sathish Babu
Professor and Head, Dept. of AIML
bsbabu@rvce.edu.in
Ph. No:+91-9844488329

Dr. Tribikram Gupta
Asst. Professor, Dept. of Physics
tgupta@rvce.edu.in
Ph. No:+91-9591970797

7. Connected Autonomous Vehicles

WIRIN

The future of the automobile is electric, shared, autonomous and connected – a very exciting area. RV College of Engineering® (RVCE) has partnered with WIPRO and the Indian Institute of Science(IISc) to establish a Center of Excellence for Autonomous Vehicle Research at RVCE . The collaboration with WIPRO and IISc in a series of special programs devised by the WIPRO Innovation Center brings together the best automotive sector experts, researchers, innovators, companies and students to create a collaborative ecosystem at RVCE. The center seeks to focus on four key technologies for autonomous vehicles: sophisticated AI technologies for vehicle control, environment perception, route planning and vehicle navigation systems. It is a collaborative platform to observe an essential component of contemporary transportation networks.

Areas of Expertise

National Dataset Collection

- Data Set Collection from LiDAR, Camera & IMU
- Annotation of the Datasets
- Deep Learning Models for Annotation Automation

AI Stack Development

- Deep Learning Models for Perception, Localization & motion Planning.
- Embedded System Design for Vehicle Control Unit
- Sensor Integration : LiDAR, Camera, IMU etc

Mechanical Design

- 3D Model of Chassis
- FE Analysis
- Brake by Wire
- Steer by Wire

Powertrain Components Design

- Battery Design & Configuration
- Battery Management System
- Battery Health Monitoring System
- PID Controller Design
- Motor & its Controller

Vehicle Simulator

- HD Map Creation
- Vehicle Modelling
- Scenario Generation on Road Runner.

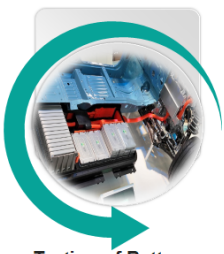
Lab & Infrastructure

Sensor

Sensor Integration Through ROS

- LiDAR
- Camera
- IMU, Ultrasonic Sensors
- Temperature Sensors etc.

Powertrain



Testing of Battery, Motor & Controllers

- EV Simulator
- Battery Testing
- Motor & its Controller Test Jig
- Battery Management System

CARLA & National Dataset

Vehicle Simulator S/W

Dataset Collection and Annotation

Integration

Embedded Controllers:

- STM
- CAN
- Display
- OBD
- Nvidia Jetson Processor

Achievements

Data Collection : Bangalore City:

9 TB Data, 10,00,000 Images, 25% Images Annotated and Integrated

Mechanical & Electrical Architecture:

CAED Modelling, FE Analysis, Brake by Wire, EV Simulator Design, Battery Design & Configuration, BMS, Motor & its Controller Integration, Integration of Power Electronics Components.

Design of ECU using Embedded Systems and ROS Integration:

Electronic Control of Speed, Steering and Brake Systems, Design of CAN Bus, Dashboard and OBD Design, Fusion Algorithm for Perception, Localization and Motion Planning!!

Vehicle Simulator & Vehicle Testing :

Desktop Simulation, V2X, Design of Real time Scenarios, Development of vehicle Simulator S/W, Design of Dynamic Vehicle Model.
Testing of Vehicle in Autonomous &Remote Control Mode, Obstacle Detection and maneuvering.

Activity & Research Collaboration

Internships

Diploma, B.E, MTech Students

Workshops, FDPs & Skill Based Training

Industry Institute Collaboration

Funded Projects, Research, Consultancy Projects

Facility Access

Under & Post Graduate Students
Research Scholars
Industries
Academic Institutes

Student Projects

In Collaboration with Industries.

Contact details

Dr. Uttara Kumari M
Professor, Dept. of ECE
uttarakumari@rvce.edu.in
Ph No:+91-9945336808

Prof. Raja Vidya
Assistant Professor, Dept. of EEE
rajavidya@rvce.edu.in
Ph. No:+91-9008395966

8. E-Mobility

Center of Excellence in Electric Mobility –COEEM is established with the objective to create a platform for academia and industry to interact, innovate and co-create newer technologies for the EV industry, all in India. The center also aims at nurturing enthusiastic students through the development of futuristic electrical vehicle solutions such as next-generation controllers, battery thermal management systems, embedded design for connected vehicles, and application development for Electric Mobility.

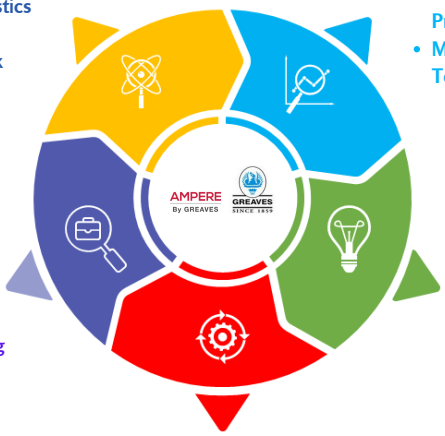
Areas of Expertise

Vehicle Maintenance

- Electric Vehicle service, diagnostics and Maintenance Operations
- Full Breakdown and Benchmark analysis

Motor Control

- Electric Motor Selection and Sizing Principles for EV Application
- Motor Control and Power Electronics Technology for Traction Applications



Thermal Management and Materials

- Magic Materials and Manufacturing Techniques for EV applications
- Thermal Management System for Electric and Hybrid vehicle's

Battery and BMS

- Battery packs and design challenges for Electric and Hybrid vehicle system application
- Battery Management Systems

Charging Infrastructure

- EV Charging Technology and Infrasturcture
- Safety, testing Regulations and Standards

Lab & Infrastructure

Hardware and software facilities available in e-Moblity Lab

Two wheelers Assembly unit

Assembling ,Disassembling ,Harnessing and Maintenece of 2 Wheelers

Hardware Facility

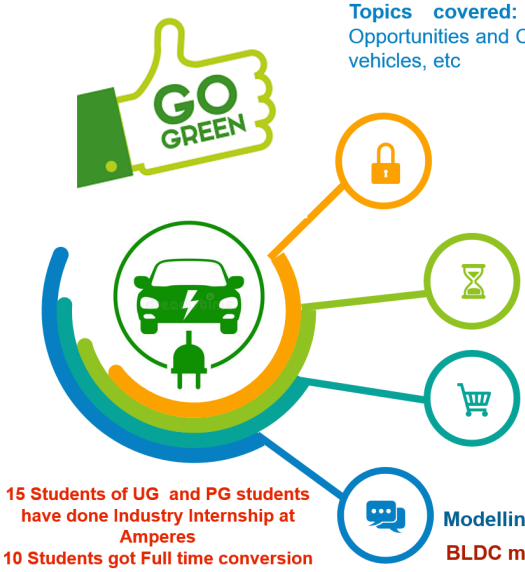
Work station,
ESD benches
Aurdino Controller

Software available

Ansys software , Altair Embed software Matlab software , PSIM software,
Ki Cad Orcad simulation software

COE - E-MOBILITY

Achievements



One Week Workshops:

Topics covered: Introduction & Benefits of EVs, Opportunities and Challenges in E-Mobility, Hybrid Electric vehicles, etc

Internships:

Internships were offered to both RV Students as well as other than RV Students.
Internships were offered for both UG and PG Students.
Statistics of Internship offered Year wise:
Yr: 2020- 48 Students completed Internships
2021- 38 Students completed Internships
2022- 02 Students completed Internships

Papers presented by Faculty Members:

Topics Covered: Futuristic energy storage devices for electric vehicles , Battery Charging Techniques for an Electric Vehicle, A comprehensive review on advanced battery technologies for E mobility, A comprehensive review on advanced battery technologies for E mobility.

15 Students of UG and PG students have done Industry Internship at Amperes
10 Students got Full time conversion

Modelling and Design

BLDC motor control using FOC algorithm

Activity & Research Collaboration

Internships
Diploma, B.E, MTech Students

Workshops, FDPs & Skill Based Training

Industry Institute Collaboration
Funded Projects, Research, Consultancy Projects

Facility Access
Under & Post Graduate Students
Research Scholars
Industries
Academic Institutes

Student Projects
In Collaboration with Industries.

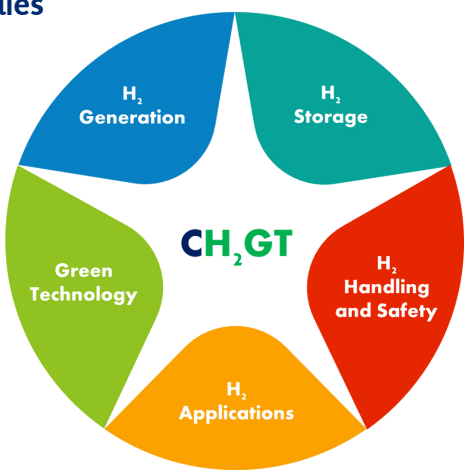
Contact details

Dr.Dinesh M.N,
Professor, Dept. of EEE
dineshmn@rvce.edu.in
Ph No: +91-9845063663

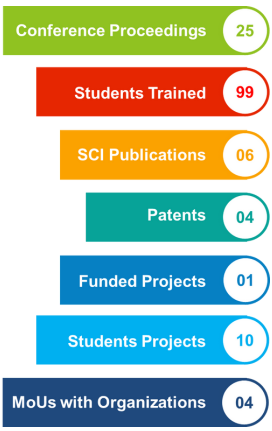
9. Hydrogen and Green Technology

United Nations has called for immediate action by all the countries. It emphasizes creating an avenue for affordable, reliable, sustainable, and modern energy, to combat climate changes and their impact along with the revitalization of the global partnership for sustainable development. Concurrently, the Government of India has initiated the National Hydrogen Energy Mission (NHEM) with a prime focus on the generation of hydrogen from green power resources and linking India's growing renewable capacity with the hydrogen economy. In line with the initiatives of the United Nations and the Government of India, RV College of Engineering has established the Center for Hydrogen and Green Technology in March 2021.

Modules



Accolades



Focus

Green hydrogen powered by solar/wind energy

Blue hydrogen through carbon capture

Liquid organic hydrogen carriers

Metal hydrides

Hydrogen impermeable materials

Hydrogen sensors and sensing systems

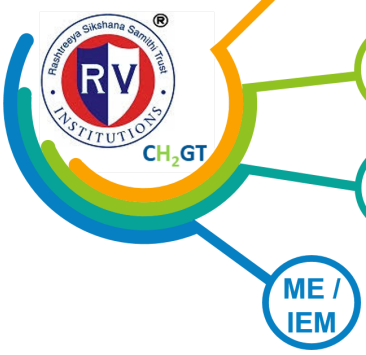
Fuel cell powered vehicles

Carbon capture

Biofuels

Renewable energy

Team and Expertise



Chemical Engineering

Process and Product Design, Renewable Energy, Fuel Cells, Solar Cells Fabrication, Waste to Energy, Carbon Capture, Clean Combustion, Computational Fluid Dynamics, Polymer Composites, Cloud Computing and Data Science

Chemistry / Civil Engineering

Inorganic nanomaterials – Synthesis, Characterization, Functionalization and Pollution Control

Electrical Engineering

Solar PV systems, Power Systems Analysis, and Power Electronics

Mechanical Engineering / Industrial Engineering

Bio Energy, Mechanical Design, IC Engines, Supply Chain Management, Lean Manufacturing, and Operations Management

Support

Karnataka Renewable Energy Development Limited
Government of Karnataka

Indian Wind Power Association
IWPA
helping mankind with energy from nature

Anvita Electronics

Nichrome Testing Laboratory and Research Pvt. Ltd.
NTLR
CONSULTING / TESTING / TRAINING / ENGINEERING

ipgi instruments
Technical Support for all

Activities

Contact details

Ujwal Shreenag Meda, PDEng, PhD
Assistant Professor, Department of Chemical Engineering
ujwalshreenagm@rvce.edu.in
Ph No:+91-8050842363

10. CCTV Research

Research to Reality

An Integrated research facility to bridge the gap in knowledge, practice, protocols, testing, experiments, training, certification and expertise in video surveillance with various industry partners providing a true multi-stakeholder research facility. The Center for CCTV Research has been created with the intention of being the catalyst to bridge the wide gap between the industry and creation & execution of humongous CCTV projects in the country.

Areas of Expertise

1	One stop shop for all the video based Solutions	Video Analytics
2	Automatic Auditing of CCTV footages hourly/daily/monthly for Video Summary	Video footage Auditing
3	Criminal Investigation of Multimedia data with advanced digital forensics	Computer Forensics
4	Intelligent Video Management	Intelligent Video Management
5	Artificial Intelligence and Machine Learning Based real time use cases through high performance computing	Visual Surveillance based solutions

Facility & Infrastructure

The Center would be the synthesis and the coordination center for all major CCTV players in the country and beyond. The creation and operations of this Center would be a clear manifestation of this dream.

Cameras

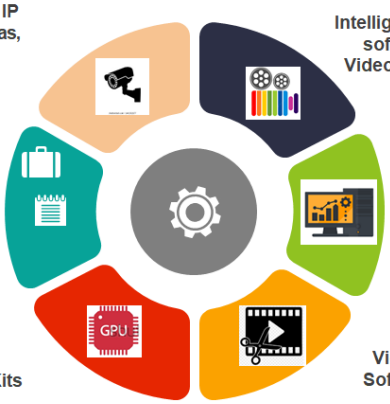
IR cameras, Bullet Cameras, IP Cameras, Body Worn Cameras, PTZ Cameras, Wi-Fi Bullet Cameras, Dome

CCTV Network Infrastructure

NVRs, DVRs, 4/8/16 ports PoE Switches, Networks, HDDs, Turbo HD DVR DS-7400 Series

GPUs

JETSON NANO Developer Kits



iVMS

Intelligent Video Management software sponsored by Videonetics Private Limited

Workstations

Intel® Core™ i9-10900K(10 Cores) Nvidia Quadro P620

Com-SUR

Video footage Auditing Software - ultima Version

Milestones

Industry academia Collaborations

Strong industry associations for development of right technical skills. MoUs with multiple stakeholders.

Research & Development

R&D Projects funded through industry.
Lab infrastructure sponsored by multiple stake holders.
Publications in International Conferences and Journals

Training

Trainings provided to students/faculty/research scholars through certification courses, Skill Development programs, industry certified internships through Center, webinars on recent trends in technology, Internships offered at industry

Prototype Development

Interdisciplinary prototype development for the inspection of real time scenarios using machine vision

Indusrty Partners

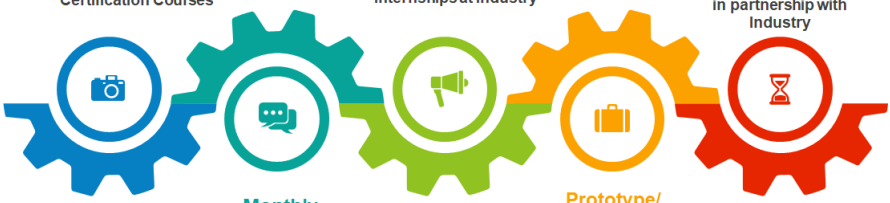
TechConPro Stitching Technology Solutions
comsur the missing piece of CCTV
NFSU National Forensic Sciences University — An Institute of National Importance (Ministry of Home Affairs, Government of India)
VIDEONETICS the future of video computing
Inferigence Quotient
mialo PROVIDING INTELLECTUAL INPUTS
MISTRAL ... Partners in Real Time
PATHCOM PathMakers of Communication & Networks

Activity & Research Collaboration

Skill Development
Skill Based Labs
Training
Certification Courses

Internships
Industry Certified Internships
Internships at Industry

R&D Projects
Execution of Research problems in partnership with Industry



Monthly Webinars
Webinars by Industry/Research Experts

Prototype/ Product Development
Interdisciplinary prototypes/Products for real time use cases

Team

Dr. Ramakanth Kumar P - HoD-CSE, RVCE, Head-CCCTVR
Dr. Sreelakshmi K - HoD-ETE, RVCE, Head Operations- CCCTVR
Shri. Sanjay Sahay, Director- TechConPro, Founder & Mentor - CCCTVR
Shri. T Shankar Head - Research and Projects
Shri. Gautam Goradia, CEO & MD-Hayagriva Software Private Limited, Mumbai
Dr. Surbhi Mathur, Senior Asst Prof. National Forenesic Sciences University, Gujarat
Dr. Hemavathy R, Assoc Prof, CSE RVCE
Prof. Poornima Kulkarni, Asst Prof. ISE, RVCE
Prof. Nagaraj Bhat, Asst Prof. ECE, RVCE
Prof. Neethu S, Asst Prof. ETE, RVCE

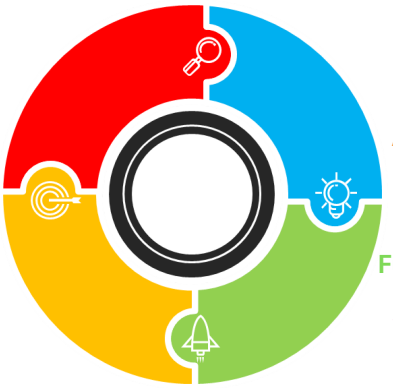
For more details contact..
Dr. Azra Nasreen, Assoc. Prof, Dept of CSE
✉ ccctvresearch@gmail.co, Ph No: +91-9886923829

11. Logistics & Supply Chain Management

The Centre of Excellence in Logistics & Supply Chain Management at RVCE is dedicated to carrying out specialized theoretical and applied research on Supply Chain and Logistics Management.
The vision of the center is to be an internationally recognized Centre for supply chain and logistics management dedicated to the creation and dissemination of new knowledge and a forum for networking with various industries, educational centers and other related entities.

Areas of Expertise

Supply Chains
Manufacturing, Oil and Gas, Health care, Food processing, Public distribution system



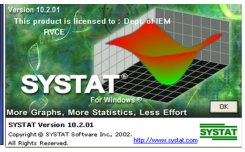
Digital Technologies
Block Chain, Digital twins Augmented Reality, Virtual Reality

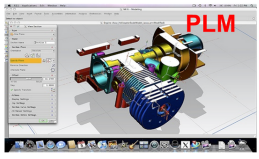
Circular Supply chains
e-waste management, recycling, reuse, sustainable economy

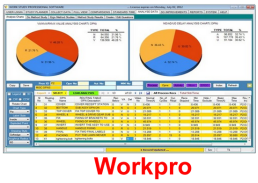
Futuristic Supply chains
Omni Channel, Warehouse Automation, Lean Logistics, Elastic Logistics

Facility & Infrastructure

The center is well equipped with trained faculty, computational infrastructure and softwares both open source and commercial







Milestones

Training students and researchers in Digital Supply chain and logistics management

- Established in the year 2021,
- MoU signed with Secure Meters
- Conducted FDP for faculty under AICTE ATAL scheme

- Research and Consultancy projects

Sanction received for a research project for Rs. 6 Lakhs under VTU RGS Scheme

- Internships

Offering internships to UG, PG students in collaboration with Industry

- Paper Publication

Papers published in reputed journals and conferences

Activity & Research Collaboration

Joint Certification courses on Supply chain and Digital Supply chain (Duration - 3 months & 6 months) and Internships

Collaborative paper publications

Research on specific issues faced by companies by RVCE Faculty and students through project work

Applying for Joint research projects for various funding agencies

Specialized Executive Development Programs on SCM

Industry Partners

SECURE

Contact details

Dr. C K Nagendra Guptha
Professor and Head, Dept. of IEM
nagendragupta@rvce.edu.in
Ph No:+91-9449612962

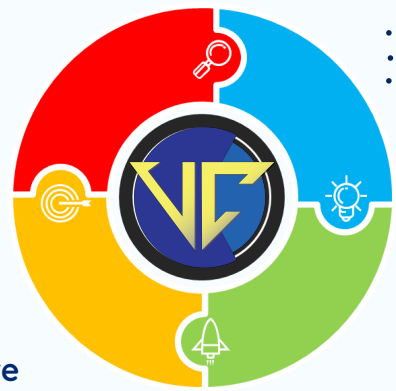
12. Visual Computing

The Center of Excellence in Visual Computing provides computing facilities for students, research scholars, and faculty members. The objective of the center is to bring the students and faculty of various disciplines together to execute interdisciplinary projects. The center facilitates the execution of computationally intensive research work in various state-of-the-art domains including Edge Computing, Parallel Programming, Artificial Intelligence, and Machine Learning. The center offers internships, and training and facilitates skill enhancement in the areas like image/video analytics, Mobile Application Development, Internet of Things, Natural Language Processing.

Areas of Expertise

Food, Nutrition, Environment and Agriculture
- Functional foods
- Nutraceutical
- Integrated water filtration system
- Precision agriculture
- Crop Monitoring

Machining and Novel view synthesis
- Tool Monitoring
- Tool Wear

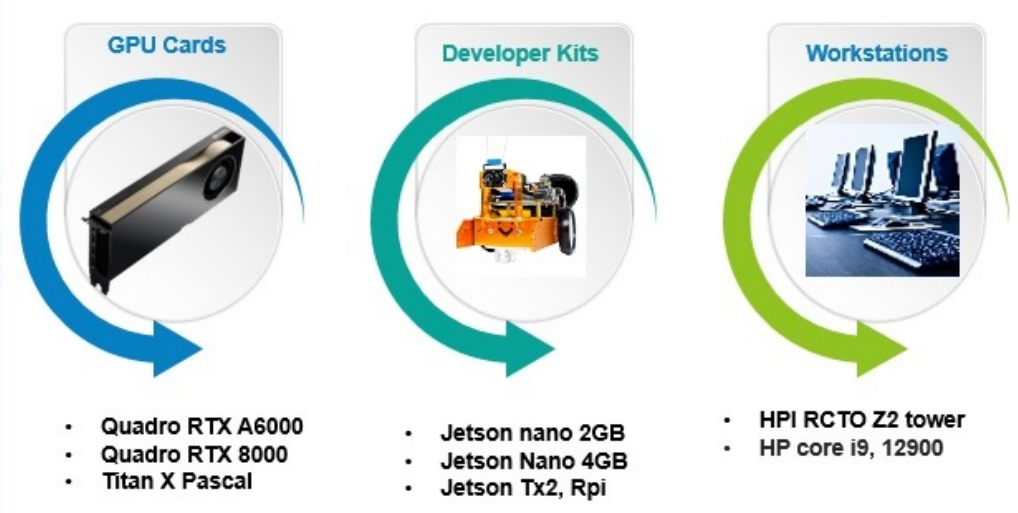


Medical Imaging and Dentistry
- Radiology
- CBCT Imaging
- Cancer detection and Recommendation

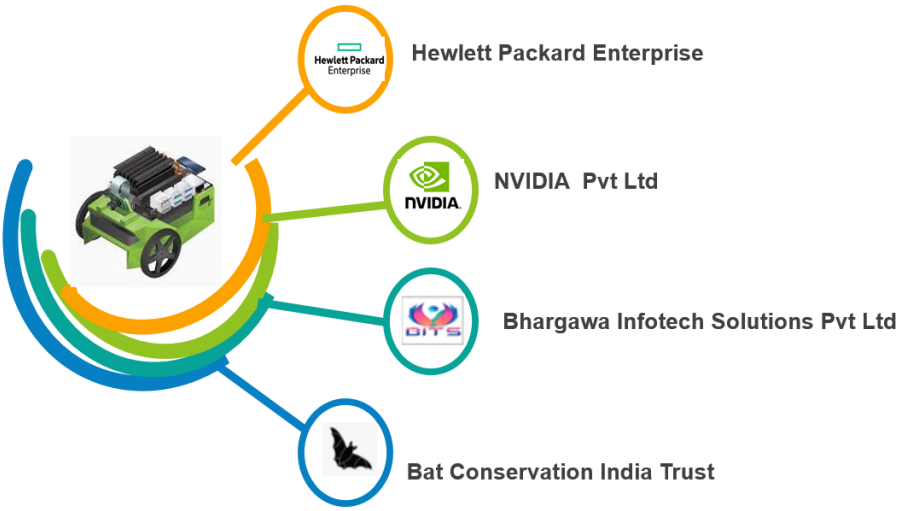
Remote Sensing and Geo informatics
- Satellite imagery Analysis
- Spectral and Spatial resolution
- Geoinformatics
- EMR Analysis
- Spatial Analysis

Facility & Infrastructure

The centre facilitates students with required infrastructure to execute vision-based applications. The available infrastructure of the centre includes high end workstations integrated with GPU cards to execute computationally intensive tasks and model deployment devices like Jetson kits.



Research Collaborators and Sponsors



Activity & Research Collaboration

Consultancy

- An Intelligent framework to detect child abuse using deep learning Ÿ
- Map a bat roost app development Ÿ
- BatEYE :An acoustic signal detecting and monitoring device for bat habitat Ÿ
- Network Architecture Comparison Tool

Student Projects

- Water Quality Assessment
- Acoustic Signal Monitoring
- Object Detection in Satellite Images

Training/Internship

Trained over 200+ students on Machine Learning , Deep Learning, Data Analytics

Technical Talk

Organised Tech Talks from

- Dailyhunt
- Samsung R&D
- Accenture Labs
- O9 Solutions
- Qualcomm

Contact details

Dr. Anala M R
Professor, Dept. of ISE
analamr@rvce.edu.in
Ph No: 8618687573

13. AI Research and Business Solution

The COE is created jointly by RV College of Engineering and Boston Ltd. UK to cater to the application of Artificial Intelligence, Machine learning, and Deep Learning in the research and development of business solutions. The COE also provides the necessary infrastructure for start-ups & technology enabled training to encourage and support start-up ecosystems

Areas of Expertise

01 Graphcore IPU-based deep learning solutions with Poplar SDKs

02 Data Science and Analytics Solutions

03 Computer Vision applications

04 Intel oneAPI - cross-architecture programming model

Facility and Infrastructure

01 **The COE has a Graphcore IPU M2000 machine with POD4 capacity to handle high-end AI workloads without dependency on the cloud infrastructure. Clients can process their data locally and build and run AI, ML, and DL models.**

02 The COE also offers curated training programs on the latest and cutting-edge technologies, like Intel One API, for Industry participants and students.

03 The COE also supports incubating ideas under industrial mentor ship and gives bootstrapping services to launch the ideas as workable products and business services.

04 The COE invites industrial consultancy inquiries in verticals such as commerce, science, healthcare, smart cities, agriculture, and others,where data science and AI technologies are needed.

Achievements

Training

01

Training over 100+ data scientists and AI developers by the end of 2023

Consultancy

02

Offering consultancy to integrate IPU-based deep learning models in AgriTech, HealthTech, FoodTech and EduTech companies.

Incubation and StartUp

03

Incubating Start-up ideas of the MSME sector inside Bangalore and across India.

Research Guidance

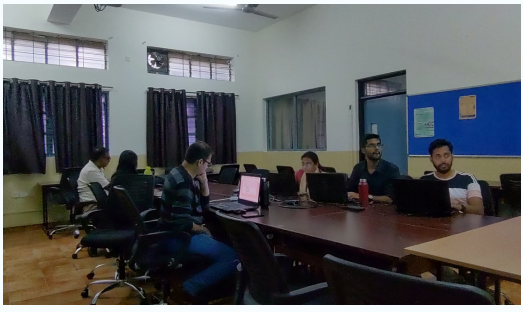
04

Providing infrastructure support and guidance for research scholars who works in the domain of Data Science and AI..

Activity and Research Collaboration

01 Successfully launched the first batch of the certification course in data science on 20/08/2022. Number of Participants: 10 (05 Industry + 05 Academics).

02 Train-the-trainer workshop on Intel Unnati Gaudi DL Lab



Contact details

Dr. B. Sathish Babu
Professor and Head, Dept. of AIML
bsbabu@rvce.edu.in
Ph No:+91-9844488329

14. Women in Cloud CoE in India

Women in Cloud Center of Excellence in India at RV College of Engineering® in association with Women in Cloud (WIC), USA would like to extend the benefits of the CoE to the beneficiaries across Karnataka state. The objectives are in line with Engineering (R & D) policy 2021 and include innovation lab programs to encourage open innovation, boost the Engineering R&D ecosystem, and recruitment assistance. WIC is a community-led economic development organization taking action to generate $1B in net new global economic access for women entrepreneurs by 2030 through partnerships with corporations, community leaders, and policymakers.

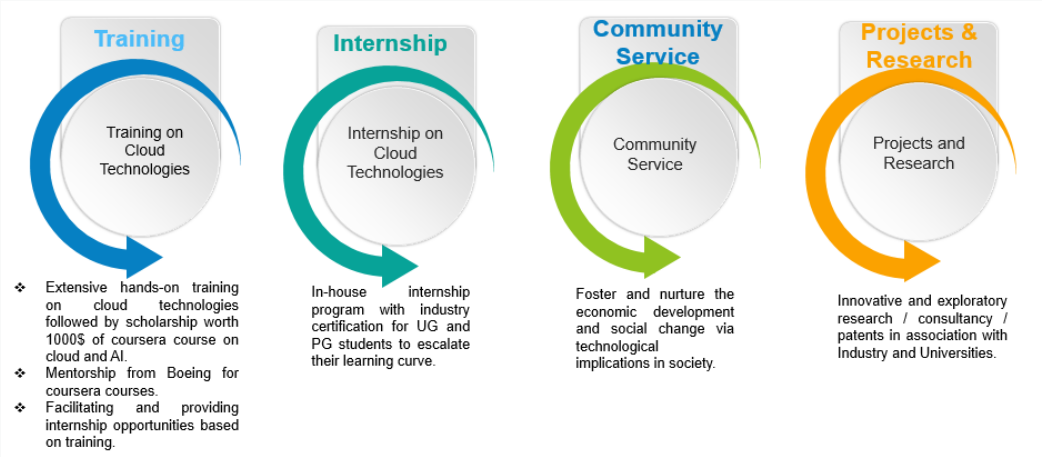
Areas of Expertise

Industry & Community partners

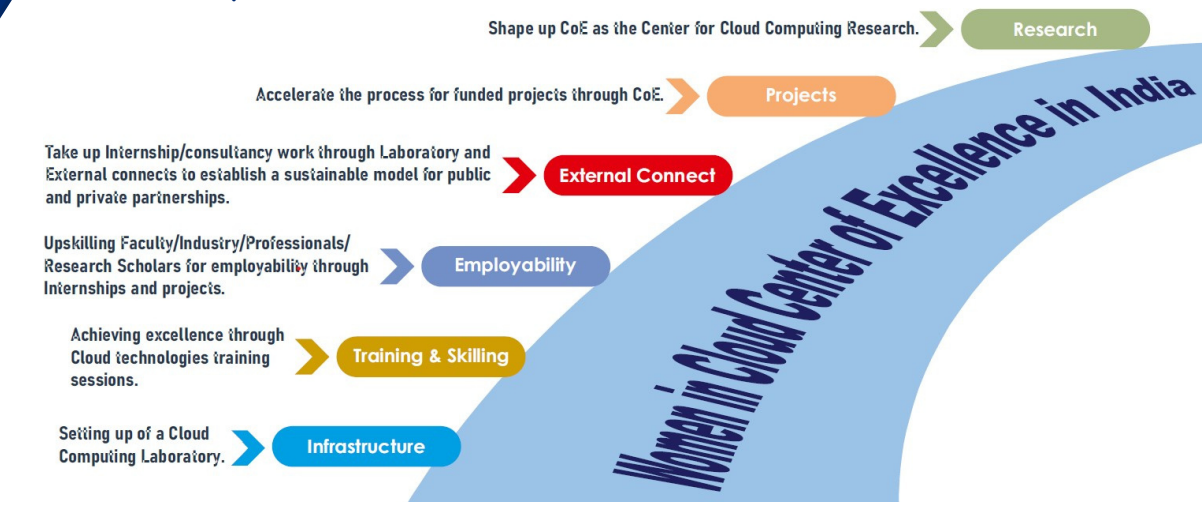
Facility & Infrastructure

Software Resources: Microsoft Azure, IBM Cloud, ThingSpeak, ELK Cloud, Google Data Studio, Docker, Python Flask, MongoDB, GitHub, Atom IDE.

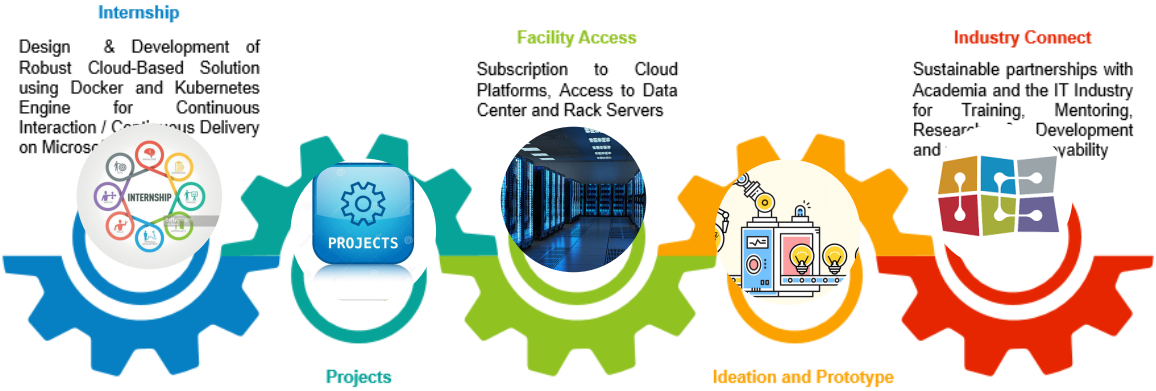
Hardware Resources: Data Center Rack Server.



Roadmap



Activity & Research Collaboration



Contact details

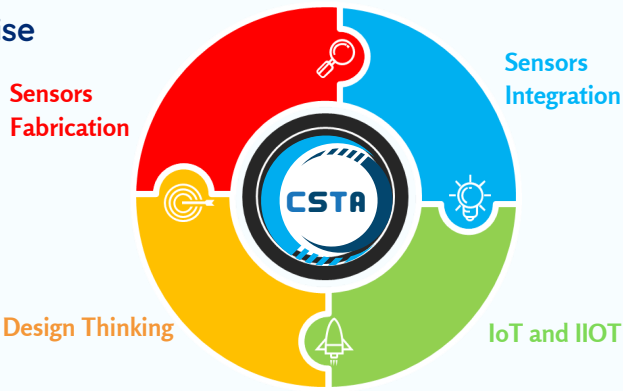
Dr. Mamatha G S
Professor, Dept. of ISE
mamathags@rvce.edu.in
Ph No:+91-9886311120

Dr. B M Sagar
Professor & HoD, Dept. of ISE
hodise@rvce.edu.in
Ph No:+91-9886332226

15. Sensor Technology and Applications

The Center for Sensor Technology and Applications (CSTA) is established in September 2022 to support academic and research programs in sensor fabrication and their integration. The center has established a strong collaboration with experts from academia, research organizations, and industries related to the domain. The CSTA was launched to suffice the need for sensors and automation in robotics, agriculture, biomedical, IoT, AI, and ML. The center has the state of the art facilities for sensor fabrication and characterization for various applications using appropriate processor/controller modules. CSTA center also supports the execution of R&D projects related to sensors, funded by various government funding agencies and industrial consultancy. In addition to research, the center also conducts national/international conferences, workshops, seminars, and Internship programs.

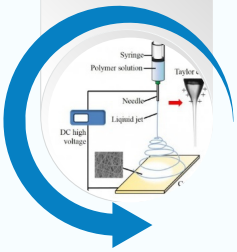
Areas of Expertise



Facility & Infrastructure

The center is well-equipped with the infrastructure necessary for sensor fabrication and its integration with processors/controllers to meet the industry standards.

Fabrication



Thin Films & Coatings

The centre is able to synthesize Nano materials and fabricate thin films and coating using various techniques to develop Sensors.

Sensors

Analog/Digital Sensors

The centre has 23 Sensors under the categories of contacting, non-contacting, rotary and Linear types. These Sensors can be used in industrial & consumer applications development.

Actuators

Linear / Rotary

The centre has various types of Actuators according to the energy source like Hydraulic, Pneumatic ,Electric and Mechanical Actuators.

Processor/ Controller

MP & MC Boards

The centre has various MCU boards to develop robotics / agriculture / biomedical / IoT / AIML and industrial automation applications.

Automatic Sanitizer

Designed and developed 50 automatic sanitizer units under the center during pandemic period. Based on the client requirements. the center is capable enough to develop such Sensor based products.

Color sorting Instrument

Designed and Developed Color sorting Instrument for Industrial engineering applications.

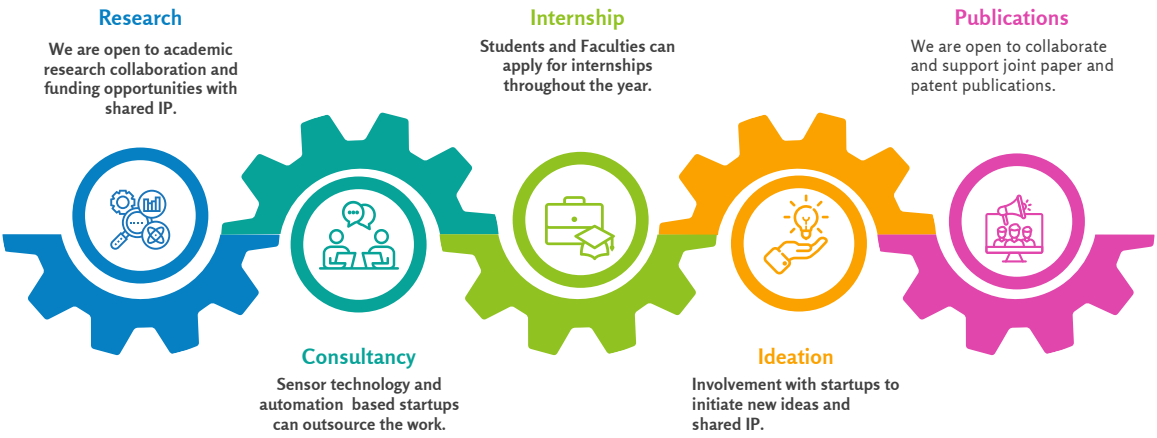
Methane GAS Sensor

Designed & developed polymer composite gas Sensor to detect methane from colorectal cancer patients. Similarly the Centre is capable of developing different GAS Sensors.

Urea Detection Sensor

Designed and developed metal nano oxide sensor for detection of urea in milk.

Activity & Research Collaboration



Contact details

Dr.Kendaganna Swamy S
Assistant Professor, Dept. of EIE
kendagannaswamys@rvce.edu.in
Ph No:+91-9980672756

16. Nanomaterials and Devices

The Centre for Nanomaterials and Devices (CND) at RV College of Engineering, Bengaluru, INDIA, was started in June 2022 to support academic and research programs in nanoscience and nanotechnology. The centre has established a strong collaboration with overseas and national nanomaterials experts in academia and industry. It has the state-of-art facilities in developing nanomaterials and characterization. The focused area of research includes nanomaterials/nanocomposites synthesis for energy, environment, electronics, electrical, telecommunication, mechanical, biotechnology, IoNTs, smart devices, chemical and civil angering applications. CND is also supporting in execution of research and development projects related to nanomaterials and devices funded by various agencies and is providing consultancy services to research institutes and industries. In addition to research, the centre also conducts international/national conferences, seminars, workshops and internship programmes on various themes of nanomaterials.

Areas of Expertise

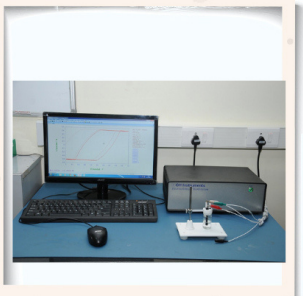
Facility & Infrastructure

The center is well equipped with infrastructure and necessary instruments for nanomaterials synthesis and characterization. Centre has two electrochemical workstation instruments for supercapacitor, corrosion, and electrochemical sensor applications.

Autoclave Reactors

Muffle Furnace

Electrochemical Workstation



Achievements

80+ International peer reviewed Journal Publications
50+ Scopus/SCI/Web of science indexed Journal articles
Q-1 articles = 20; Q-2 articles = 18; Q-3 articles = 08;
PhD : 5 (Persuing); PG projects = 30; UG Projects = 20

Activity & Research Collaboration

Contact details

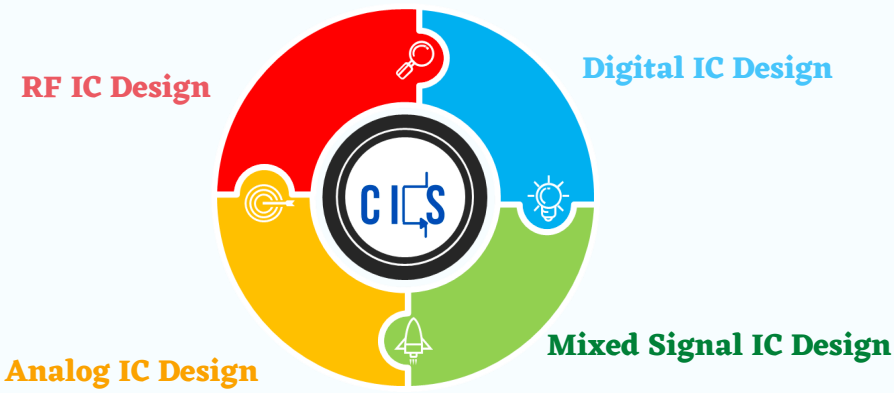
Dr. Manjunatha C
Asst. Professor, Dept. of Chemistry
cnd_rvce@rvce.edu.in
Ph No:+91-90366 51277

Dr. Sudha Kamath M K
Assoc. Professor and Head, Dept. of Physics
sudhakamath@rvce.edu.in
Ph No:+91-94804 04395

17. Integrated Circuits and Systems

The CoE consists of passionate students and faculty members willing to create an eco-system that inspires the VLSI/Electronics system designer, to nurture the skills and innovative ideas, and to promote sustainable and interdisciplinary research, with inclusive societal concerns. The CoE promotes a coherent training program that enhances the skill set of young designers in the specified areas with academia-industry collaboration in India and abroad. It aims at engaging enthusiastic students in design/development activities through funded projects and consultancy works from various organizations thereby contributing to the growth of the nation.

Areas of Expertise



Our Activities

Invited talks: Talk was delivered by Mr. Prakash Bettadapur on the topic "Product Engineering and Agility- An overview".

Consultancy Projects with Lekha Wireless Solutions Inc.

MoUs: Entuple technologies to assist the centre with fabless design. Lekha Wireless solutions which will offer consultancy projects and internships.WPIF which will offer internships to students. SCL technologies have offered 180nm PDK.

Paper Publications: Publishing research papers in the field of IC design

Activity & Research Collaboration

RESEARCH

Open to academic research collaboration and funding opportunities

INTERNSHIP

Internship opportunities throughout the year for students and faculties

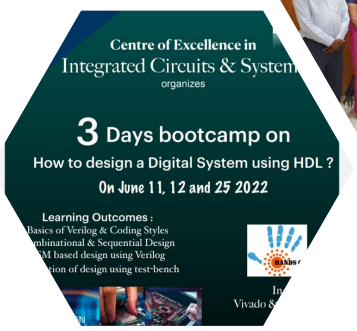
TRAIN THE TRAINER PROGRAMMES

CONSULTANCY

IC design consultancy projects with various industries

IDEATION

Involvement with industry to initiate new ideas



Contact details

Dr. Chinmaye R
Assistant Professor, Dept. of ECE
chinmayer@rvce.edu.in
Ph No:+91-9611109269

Dr. Ravish Aradhya H V
Professor & Head, Dept. of ECE
ravisharadhya@rvce.edu.in
Ph no:+91-6360290588

18. Education and Digital Learning Research

CEDLR is a lab dedicated to providing excellence in education to enhance teaching and learning for holistic growth. The CoE works with the vision of ***"Transformation of education and learning through the adoption of digital initiatives to enhance learnability and research in engineering education"***

Facility & Infrastructure

- The center is well equipped with trained faculty, computational infrastructure and neccessary teaching learning softwares both open source and commercial
- The Center conducts training and workshops for faculty on ICT usage, the teaching-learning process and accreditation

Activity & Research Collaboration

ICT usage	Tools Analysis	Development of Tools	Validation
Teaching & Learning	Training & workshop	High performance computing	Virtual Experiment & simulation
Publications	National/ Int national Journal	Conference	

Contact details

Dr. B V Uma
Professor & Dean-Student Affairs
umabv@rvce.edu.in
Ph No:+91-9845593646

19. Automation Technologies
RV-Bosch Rexroth

The Center for automation technologies was established in 2010 in collaboration with Bosch Rexroth. This interdisciplinary facility provides training to students, faculty, and industry personnel in the area of Hydraulics & Pneumatics, Mechatronics, PLC, and the Industrial Internet of Things.

Areas of Expertise

Industry 4.0
IoT Application & Implementaion

Hydraulics & Pneumatics
Circuit design & Analysis

Mechatronics
Applications & Demonstration

PLC & SCADA
Programming& Simulation

Facility & Infrastructure

The center is well equipped with H/W and S/W facilities such as hydraulic and pneumatic training kits, new generation PLCs, Mechatronics system, Motion controllers, CNC simulator, Automation Studio software, Indralogics, Winstudio, and IoT gateway software.

Hydraulics& Pneumatics

Hydraulics & Pneumatics
Hardware kit to execute various circuits and also Automation studio simulation software to verify the same

PLC & SCADA

PLC & SCADA
Basic to new generation Hardware PLC kits and Indralogic works software to execute the same.

Mechatronics

Mechatronics
Automated assembly operation system, PLCs to change the sequence of operations

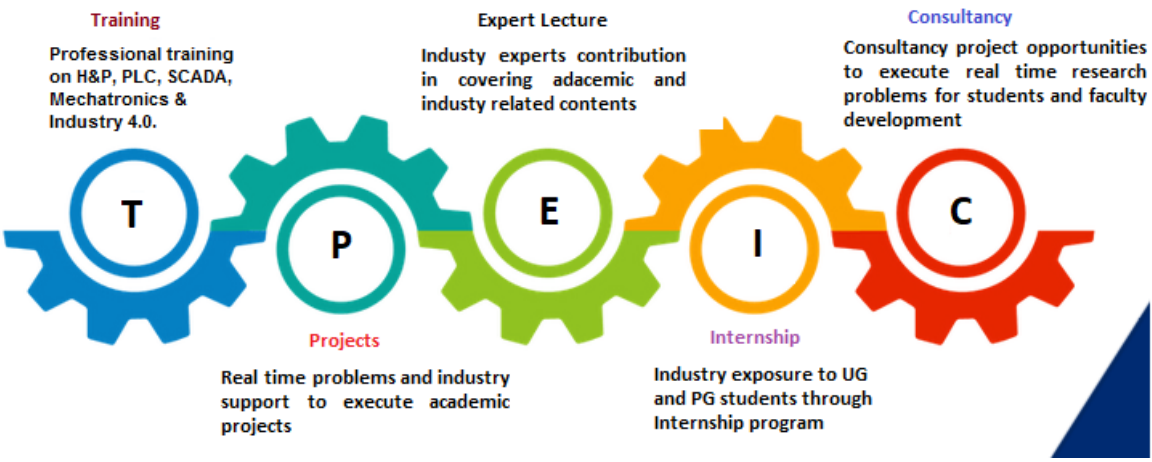
Industry 4.0

Industry 4.0 kit
Understanding the basic requirement to create IoT based project and cloud connection through gateway

Achievements

- Professional training on Hydraulics and Pneumatics system, Mechatronics, PLC-SCADA, and Industry 4.0
- Internship : Providing opportunities to students to get industry exposure and corporate culture.
- Student Projects: Supporting academic projects by defining real time projects and involvement of industry experts to guide the students
- Consultancy projects: Opportunities for faculty and students to execute the research related problems based on industry inputs

Activity & Research Collaboration



Department Involved:
Department of Mechanical Engineering
Department of Electronics & Communication Engineering
Department of Electronics & Instrumentation

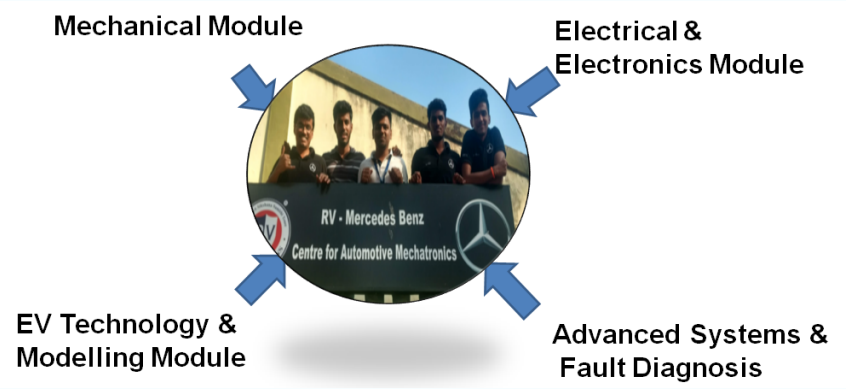
Contact details

Dr. S K Harisha
Associate Professor, Dept. of ME
harishask@rvce.edu.in
Ph No:+91-9886435884

20. Automotive Mechatronics
(RVCE - Mercedes Benz)

RVCE in association with Mercedes Benz Academy offers a globally valid one-year 'Advanced Diploma in Automotive Mechatronics'. The course is predominantly skill-based with an emphasis on hands-on learning. Mercedes is involved in planning the syllabus, development of state-of-the-art **EV - technology, car bay, aggregate training rooms equipped with Mercedes-Benz training cars, engines, transmissions**, training of faculty, and supply of tools & equipment to train students in-line with the rapidly growing luxury automotive sector not only in India but across the globe. The aim of the course is to produce qualified, industry-ready professionals to be recruited at dealerships of MBIL as well as other brands of automobiles, automotive manufacturing plants, and also at automotive R&D centers.

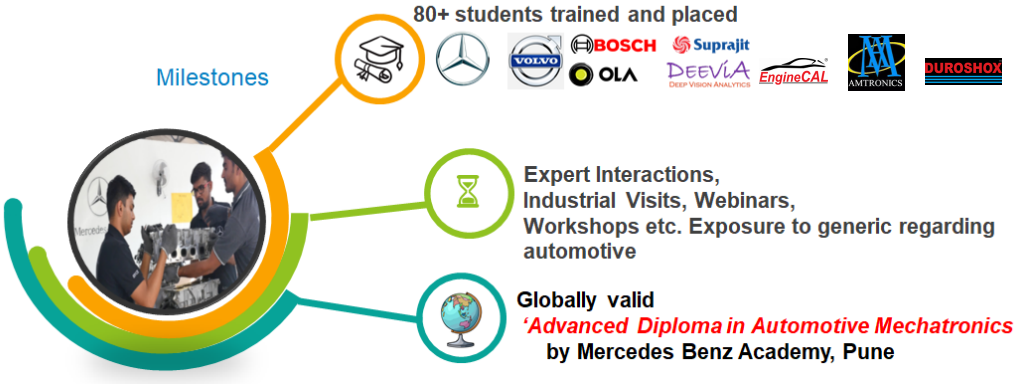
Modules



Facility & Infrastructure

Faculty /trainers from RVCE, are Doctorates/Postgraduates in Engineering with rich experience and are trained on Automotive Mechatronics at Mercedes-Benz plant in Chakan, Pune

Achievements



Activities

Contact details

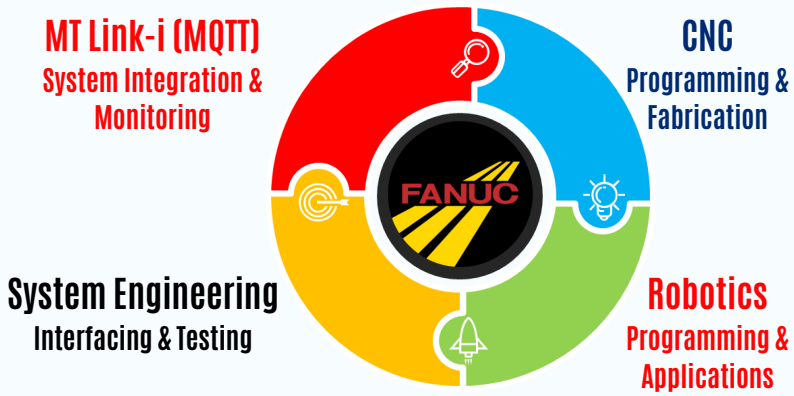
Dr. Sridhar R
Associate Professor, Dept. of ME
sridharr@rvce.edu.in
Ph No:+91-9740400717

Prof. Ravishankar Holla
Assistant Professor, Dept. of ECE
ravishankarholla@rvce.edu.in
Ph No:+91-9480111040

21. Automation and Robotics
RV-CAR

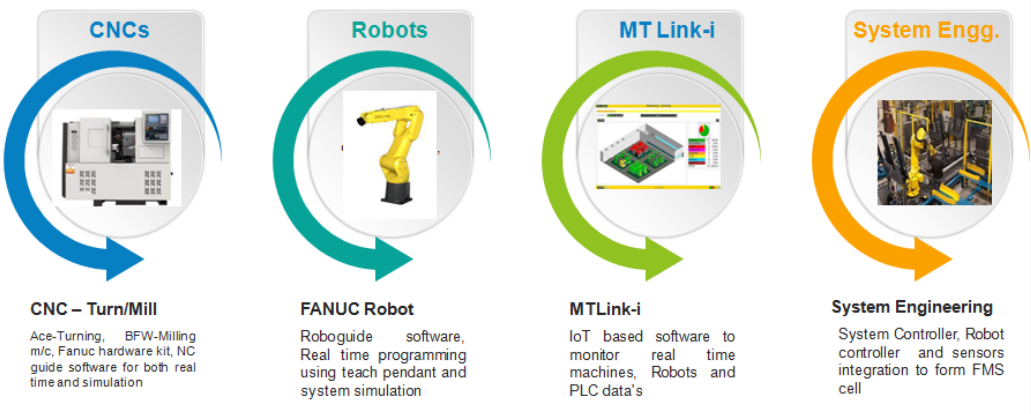
RV - Center of Excellence in Automation and Robotics (RV-CAR) is an interdisciplinary center initiated by the Mechanical and Industrial Engineering Department to train students and faculty members in the area of CNC robotics and IoT. This center provides academic projects, consultancy projects, and FANUC expert support for a better Industrial exposure.

Areas of Expertise

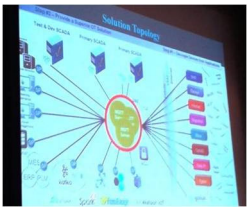


Facility & Infrastructure

The center is well equipped with latest H/w and S/w facilities such as FANUC Robot, CNC Hardware kit, NC guide software, Roboguide software, MQTT IoT software, Production CNC Turning and Milling machines and also system integrated components.



Achievements



Professional Traning

Professional traning on CNC programming, Robot Programming, IoT and System level integration

Internship

Providing opportunities to students to get industry exposure and corporate culture

Students projects

Supporting academic projects by defining real time projects and involvement of industy experts to execute the same

Consultancy Projects

Opportinities for faculty and students to execute the research related problem executon based on industry inputs

Activity & Research Collaboration

Training

Professional traning on CNC, Robot, MQTT and Interfacing

Expert Lecture

Industy experts contribution in covering adacemic and industy related contents

Consultancy

Consultancy project opportunities to execute real time research problems for students and faculty development

Projects

Real time problems and industry support to execute academic projects

Internship

Industry exposure to UG and PG students through Internship program

Contact details

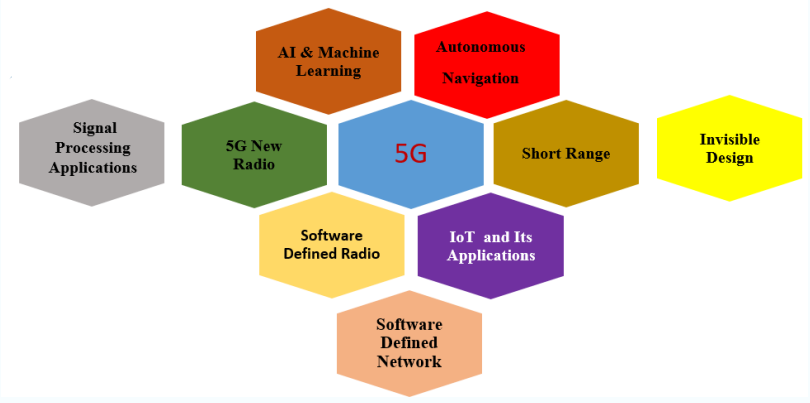
Dr. S K Harisha
Associate Professor, Dept. of ME
harishask@rvce.edu.in
Ph No:+91-9886435884

Prof. Shruthi M N
Assistant Professor, Dept. of IEM
shruthimn@rvce.edu.in
Ph No:+91-8217061588

22. 5G and Emerging Wireless Technologies

The Center for 5G and Emerging Wireless technologies at RV College of Engineering® was started in September 2022 to support training, consultancy, and Research. The center aims at enhancing knowledge and skill through training. The center focuses on undertaking interdisciplinary research projects through collaboration with industry and research organizations. The center has signed an MoU with the German Academy for Digital Education to provide training for students and faculty to enhance their knowledge in the 5G and Allied technologies.

Technology Trends in 5G



Facility & Infrastructure

The center is supported by MODROB AICTE under the title, Modernization of Advanced RF and Wireless Communication Laboratory with full-fledged testing and characterization of the passive and active circuits for 5G and Allied technologies with a sanctioned amount of Rs.15,97,650.

Mixed Domain Oscilloscope

USB Spectrum Analyzer

Arbitrary / Function Generator

Integrated Research Facility

Certification Program

The Centre aims to provide certification program on 5G and allied technologies for Faculty and students.

Projects

The Centre Focusses on collaborative research with Industry and research organisation.

Internship

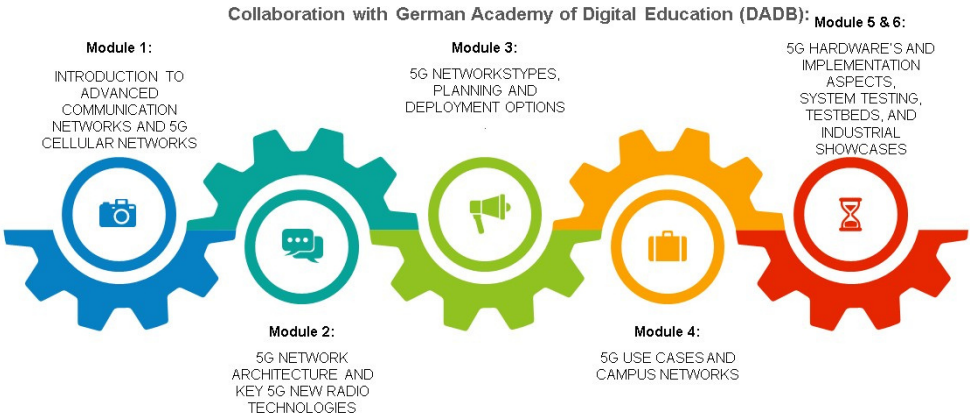
The Centre offers internship in collaboration with industry and R&D centres.

Workshops

The Centre organize workshops/FDP to enhance the knowledge and skills.

Activity & Research Collaboration

Certification Program on 5G



Contact details

Dr. Nagamani K
Professor, Dept. of ETE
nagamanik@rvce.edu.in
Ph No:+91-9916075071

Dr. K Saraswathi
Associate Professor, Dept. of ETE
ksaraswathi@rvce.edu.in
Ph No:+91-9880166866

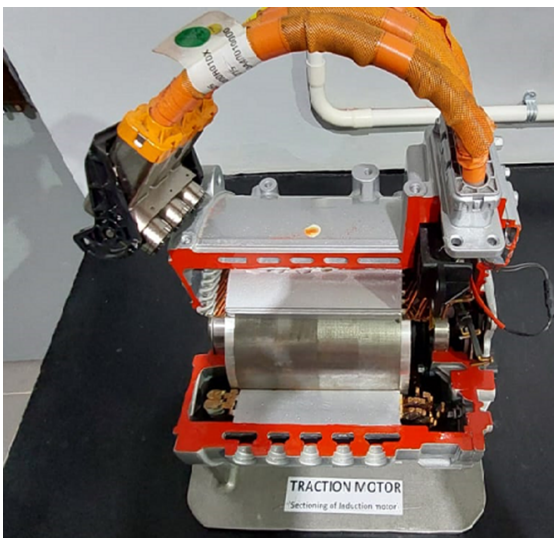
23. Electric Vehicle Technology

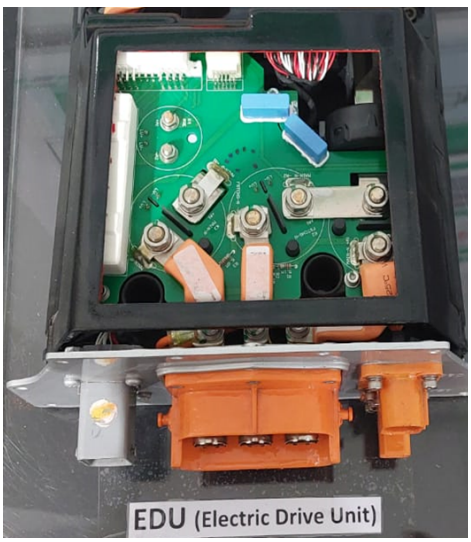
RVCE - Morris Garage

The CoC-EV (Centre of Competence in Electrical Vehicle) is a group of passionate students and faculty from RVCE. The group works in association with industry partner MG Motor India Pvt. Ltd., offering career-oriented skill development in EV Technology to cater to the Automobile Industry. The CoC works with the vision *"To provide Quality skill training, professional Knowledge, and employment opportunities in Electric Vehicles domain to the Young Professionals."*

Facility & Infrastructure

- State of the art Lab facility provided by Morris Garages India Pvt Ltd.
- The centre is supported by MGI with ZS-EV car.
- Practical experiments on high end Morris Garages EV car.
- Regular interaction with experts from Morris Garages to keep abreast of latest developments in industry.





Activity & Research Collaboration

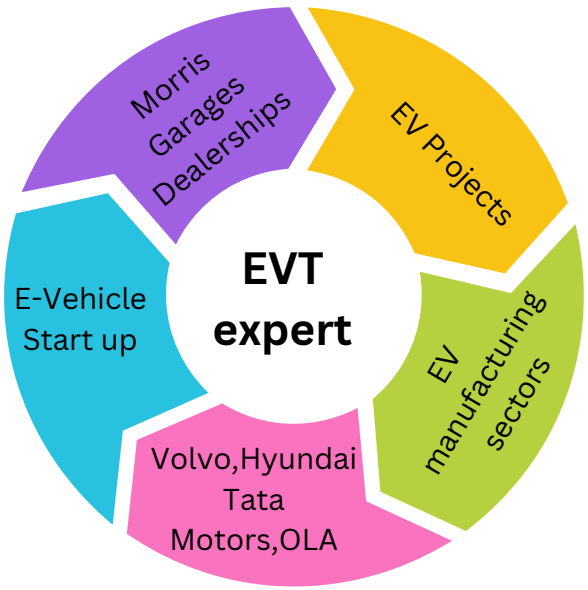
Certification program- MG-RVCE Nurture Program in Electric Vehicle Technology

Course Modules

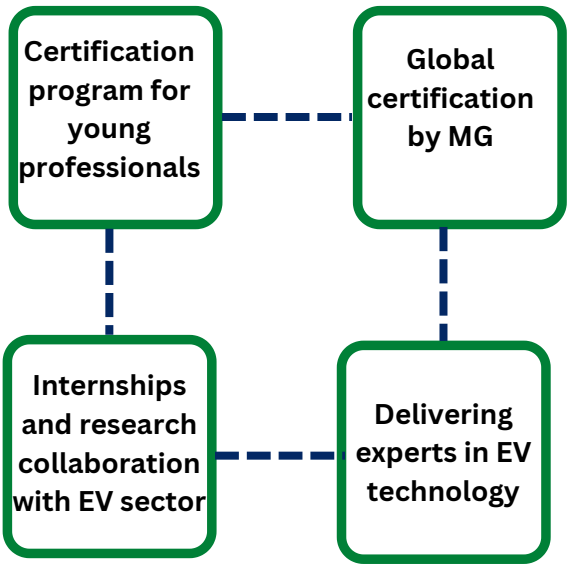
1. Introduction to EV
2. High/Low Voltage System
3. Periodic maintainance
4. Connected car

- Extensively trained faculty by Morris Garages India Pvt Ltd.
- Two batches of 20 students per year
- Educated through invited talks/webinars from automotive sectors.

Placement assistance



Milestones



Contact details

Dr. M Krishna
Professor and Head, Dept. of ME
krishnam@rvce.edu.in
Ph No:+91-9980480001

Prof. Mahendra B M
Assistant Professor, Dept. of ECE
mahendra.bm@rvce.edu.in
Ph No:+91-9164602538

24. Decibels RVCE - EV Center of Competence

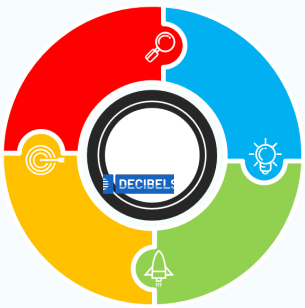
EV COC is established by the Decibels lab at RV College of Engineering with the help of govt. Of Karnataka Elevate 2021 fund, KBITS, department of IT, BT, Govt. of Karnataka.

The aim of COC is to create an industry-ready talent pool for EV sector demands by facilitating Domain-specific, hands-on training programs for students, fresh graduates, faculties & Industry Professionals. And hand-hold technical colleges & universities in assisting/creating courses, Elective subjects, honors, post-graduate diploma programs, master degrees, practical labs & E-learning learning content. Decibels aim to create 100+ COC within 2025 across India and abroad to become the leader in talent Development for automotive industry needs.

Areas of Expertise

Electric Vehicle Powertrain Development

Battery Management System Algorithm Development



Cell & Battery testing & characterisation

Electric vehicle Integration & testing

Facility & Infrastructure

The center facilitates the state of art lab infrastructure to perform cell testing for cell selection, cell behavior analysis, validation of simulation to real-world behaviors, and environmental chamber for studying the cell/pack b/w -20 to +80 Deg celsius and vehicle level testing with a chassis dynamometer for perfromace analysis and controller tuning.

Cell testing & characterisation lab

Environmental chamber (-20to +80 Deg)

2W chassis dynamometer

Milestones: Student placements

Course offerings at COC

1. Certification Course (3 Days)
1.1 Electric Vehicle Engineering

2. Educational Internships (4 Weeks)
2.1 EV Powertrain Modeling
2.2 Li-ion Cell & BMS Algorithms Modeling
2.3 Motor Controls

3. Micro-Specialization / Pre-Master Courses (3-Month)
3.1 EV Powertrain Design
3.2 Li-ion Cell & BMS Algorithms
3.3 EV CAE

4. Master Courses (9-Month)
4.1 Electric Vehicle Powertrain Design & Validation
4.2 Battery Management Algorithm Development

Contact details

Naveen C S
Center Head
naveen@decibelslab.com
Ph No:+91-8951503455

Dr. Sridhar R
Associate Professor, Dept. of ME
sridharr@rvce.edu.in
Ph No:+91-9740400717

About Centers of Excellence & Centers of Competence

Centers of Excellence

Sl. No	Center	Year of starting	Activity
1	Center for Macro Electronics	2013	To fabricate and characterize new class of materials, devices and systems based on nano materials, amorphous semiconductors, polymers, metal oxides and MEMS and also to develop flexible microelectronics devices, sensors, solar cells and TFTs for applications in health care, defense, communication fields, etc.
2	RVCE-HPCC Center for Cognitive Intelligent Systems for Sustainable Solutions	2017	To promote interdisciplinary research and outcome-based education to nurture future experts in Intelligent Systems. To develop sustainable innovative solutions to solve real world problems. Utilizing open-source tools for developing Cognitive Intelligent Systems and optimizing the resources.
3	Center for Internet of Things (IoT) (CISCO-RVCE)	2018	Develop employable human resource to meet the challenges in the field of IoT. Strengthen the connected-technology laboratories for training, design, implementation and maintenance, Establish a competence center in research and innovation across various verticals of IoT. Create technology business incubation center for IoT
4	Center for Computational Genomics [Intergene Life Sciences]	2019	To provide skill development training to students leading to enhanced research ability. An integrated base to provide solution in agriculture and healthcare research sectors.
5	Center for Smart Antenna Systems & Measurements (SASM) [Wavcom Pvt Ltd]	2019	Analysis, Design, Development of Antennas and RF devices and their Characterization for Defence and Wireless Communication Applications.
6	Center for Interdisciplinary Research in Quantum Information and Technology [CIRQuIT]	2019	Fundamentals and advances in quantum physics and quantum information theory to develop quantum safe security techniques for cyber physical systems, solve optimization problems and work on experimental and theoretical quantum physics.
7	Center for Connected Autonomous Vehicles – WIRIN	2019	Analytical models for automation, Data Analytics. Vehicle Automation Hands on modules: Data Acquisition using sensors – RADAR, LIDAR, Data processing and Actuation; Self Driving Car Vehicle Simulator (SDV in a Box), Acoustics Simulator, Application of Deep Learning models for vehicle detection – image annotation, LIDAR annotation, Acoustic annotation, object detection, compressive sensing, obstacle detection.
8	Center for e-Mobility [Greaves Cotton]	2020	Developing futuristic Electrical vehicle solutions such as Next Generation Controller, Battery Thermal Management – GCL IP project, Embedded Design for Connected vehicles and Application development for Electric Mobility.
9	Center for Hydrogen and Green Technology Research	2021	Developing affordable, reliable, an sustainable Hydrogen energy systems. Providing sustainable solutions to industrial and societal problems. Enhancing employability and creating startup culture in aspiring minds. Promoting innovation and entrepreneurship among youth.
10	Center for CCTV Research [TechconPro]	2021	To bridge the gap in knowledge, practice, protocols, testing, experiments, training, certification and expertise in video surveillance with various industry partners providing a true multi-stakeholder research facility.
11	Center for Logistics and Supply Chain Management [Secure Meters]	2021	Advanced supply chain management models for small, medium and large-scale industries for Healthcare, General Engineering and other sectors.
12	Center for Visual Computing	2021	Execution of computationally intensive research works in various state-of-the-art domains including Edge Computing,Parallel Programming, Artificial Intelligence and Machine Learning.
13	Center for AI Research and Business Solutions (Boston-RVCE)	2022	AI Research & Business Solutions, Industry Certification Course in Data Science, Consultancies in the domain of AL

14	Women in Cloud: Center of Excellence in India	2022	To accelerate women and allies' access to digital skilling, technology innovation, and job placement by leveraging public-private partnerships
15	Center for Sensor Technology Applications [Nexsys]	2022	To establish state of the art facilities for the development of Sensors fabrication and their characterization to develop various applications. To enable collaboration with national and international experts in the field of sensors fabrication and its applications development leading to papers, patents and products. Connecting academia and industries by commercializing the developed products and internship execution. To produce highly trained industry ready researchers to address the societal challenges like robotics / agriculture/biomedical/IoT/AIML and industrial automation applications through Sensor Technology and its integrations, using appropriate processor/controller modules.
16	Center for Nano Materials and Devices	2022	To develop advanced nanomaterials for sustainable solutions. To establish state-of-the-art facilities to enable a strong foundation for research and development of prototypes devices. Facilitate the interdisciplinary/multidisciplinary collaboration with foremost experts at national and international level, leading to papers, patents, prototypes, and products. To produce highly-trained researchers to address the challenges of energy, environment, engineering, agriculture and biomedical fields though nanoscience and technology approach. Connecting academia and industries by commercializing the developed products. Establish start-ups in nanomaterials devices for product development.
17	Center for IC and Systems	2022	The CoE consists of passionate students and faculty members willing to create an eco-system that inspires the VLSI/Electronics system designer, to nurture the skills and innovative ideas, and to promote sustainable and interdisciplinary research, with inclusive societal concerns.
18	Center for Education & Digital Learning Research (CEDLR) [Institutional]	2022	Hands on modules - Content Development for teaching and learning integrating advanced digital technologies
Centers of Competence			
19	Bosch Rexroth – RVCE Centre of Competence in Automation	2010	Training on Hydraulics, Pneumatics, Mechatronics, PLC, SCADA and Industry 4.0, Student project execution, Consultancy projects, Guest lecture from Industry Experts.
20	RV-Mercedes Benz Center for Automotive Mechatronics	2018	1 Year course on Advanced Diploma in Automotive Mechatronics, Student internship training
21	Center for Automation and Robotics (Digital Manufacturing)	2022	Training on Robotics, CNC,MT Link-i, System Engineering Equipment's, Student project execution, Consultancy projects, Guest lecture from Industry Experts
22	Center for 5G and Emerging Wireless Technologies	2022	Building state of the art infrastructure for designing and implementation of advanced wireless solutions for industrial and societal benefit. Enhancing Knowledge and Skill through training to make students industry ready. Undertaking interdisciplinary research projects through collaboration with Industry & research organizations and developing Sustainable Solutions.
23	Center for Electric Vehicle Technologies (RVCE-Morris Garage)	2022	Skill development certification program on Electric vehicle technology is provided for young professionals. Joint internships and research projects with MG India
24	Center of Competence in Advanced Automotive Systems [Decibels]	2022	Offering state of the art courses in the automotive & other technology domains.To continuously be abreast with the pace of technology development & engage with technology companies, IT tools & the latest learning techniques.To establish a relevant connect & relationships with the industry for placements & on boarding the trained professionals, Execution of ELEVATE GRANT, selected by Govt. of Karnataka.

Vision

Leadership in Quality Technical Education, Interdisciplinary Research & Innovation, with a Focus on Sustainable and Inclusive Technology

Mission

- To deliver outcome based Quality education, emphasizing on experiential learning with the state of the art infrastructure.
- To create a conducive environment for interdisciplinary research and innovation.
- To develop professionals through holistic education focusing on individual growth, discipline, integrity, ethics and social sensitivity.
- To nurture industry-institution collaboration leading to competency enhancement and entrepreneurship.
- To focus on technologies that are sustainable and inclusive, benefiting all sections of the society.

Contact Details:

Dr. K. N. Subramanya
Principal
R V College of Engineering
R V Vidyanikethan Post
Mysuru Road, Bengaluru - 560059
Ph : 91 - 080-681881000/8111-12
Fax: 91 - 080-6717 8011