

Ram S Iyer

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Education

Rajiv Gandhi Institute of Petroleum Technology

Bachelor of Technology in Electronics Engineering: GPA 9.37/10 i.e. 3.75/4.0

Oct 2021 – May 2025

Jais, UP

Bharathiya Vidya Bhavan

Intermediate(10+2): 94.2 %

Jun 2018 – Mar 2020

Kozhikode, Kerala

Relevant Coursework

Electronics:

- EMFT and Transmission Lines
- Analog Circuits and Communication
- Digital Circuits and Communication
- Internet of Things and Machine Learning
- Signals and Systems
- Microprocessor and Embedded Systems

Data Science and Mathematics:

- Data Structures and Algorithms
- Computer Programming and Utilization
- Calculus
- Linear Algebra
- Differential Equations
- Probability and Statistics
- Stochastic Processes
- Computer Vision

Online Certifications:

- Introduction to IoT and Embedded System Specialization – Coursera
- Deep Learning Specialization – Coursera
- Generative Adversarial Networks (GANs) Specialization – Coursera
- Introduction to Electronics – Coursera

Publications

- **RS Iyer**, NS Iyer, RP Ammal, A Joseph, “Harnessing machine learning and virtual sample generation for corrosion studies of 2 alkyl benzimidazole scaffold small dataset with an experimental validation”, Journal of Molecular Structure [\[LINK\]](#)
- **RS Iyer**, A Tripathi, S Agarwal, “IoT based Face Recognition Robot Implementation for Surveillance Applications”, 6th International Conference on VLSI, Communication and Signal Processing (VCAS 2023)[\[LINK\]](#)
- A Menon NP, **RS Iyer**, Pournami PN, Jayaraj PB, Pranab Dey, “Task-Agnostic Explainable Contrastive Learning Model for Malignant Cell Detection in Urine Cytology”, Under review (IEEE Open Journal of the Computer Society) [\[GITHUB LINK\]](#)
- **RS Iyer**, NS Iyer, RP Ammal, “MI CAM: Mutual Information Weighted Activation Mapping for Causal Visual Explanations of Convolutional Neural Networks”, Under review (The 9th ACM Conference on Fairness, Accountability, and Transparency (FAccT 2026)) [\[Arxiv Preprint LINK\]](#)
- NS Iyer, B Bhaumik, **RS Iyer**, S Changdar, “Gradient Enhanced Self-Training Physics-Informed Neural Network (gST-PINN) for Solving Nonlinear Partial Differential Equations”, Under review (Neural Networks) [\[Arxiv Preprint LINK\]](#)
- **RS Iyer**, V Bharti, A Kumar, A Sharma, “MI-Grad-CAM: Letting Your Model Reveal What’s Most Informative”, Under review (IEEE Transactions on Pattern Analysis and Machine Intelligence) [\[GITHUB LINK\]](#)
- **RS Iyer**, S Raj, V Mishra, S Shrivastava, “Deep Learning-Based Multiuser Classification for Malicious User Detection in 5G and Beyond Cooperative Sensing Systems”, 10th IEEE International Symposium on Smart Electronic Systems (IEEE - iSES 2024)[\[LINK\]](#)
- A Menon NP, **RS Iyer**, Sourabh Sharma, Tanmay Suresh, Simi S, Ganesh Gopalakrishnan, Pournami PN, Jayaraj PB, “Hailo-8L-Accelerated Embedded Framework for Bladder Carcinoma Detection Using Distilled YOLO Models”, Under review (IEEE Embedded Systems Letters)
- **RS Iyer**, G Rai, S Agarwal, A Pandey, “FAKE: Fusion Ensemble-Based Data Imputation and Prediction Framework for Water Quality Index Estimation in Sparse Aquatic IoT Datasets”, Submitted (IEEE Sensors Journal)

- **RS Iyer**, “An Introduction To Computer Vision For High School Students”, (Book, ISBN: 9798230691860) [\[LINK\]](#)

Technical Skills

Programming Languages: C, C++, Python, CLI

Software Packages: OpenCV, MATLAB, AutoCAD, Arduino IDE, Tina-TI, LaTeX

Libraries: Scikit-Learn, Tensorflow, Pytorch, Pytorch Lightning, Matplotlib, Pandas, NumPy, SciPy, Seaborn, dlib, MNE

Micro-controller Boards: Arduino, Raspberry Pi, Jetson Nano

Research Experience and Internships

In External Collaboration

Machine Learning in Corrosion Studies

Independent Research

May'23-Aug'23

- Worked on **harnessing machine learning and virtual sample generation for corrosion studies of 2-alkyl benzimidazole scaffold-based corrosion inhibitors** with an experimental validation.
- The small dataset problem was handled by implementing a novel virtual sample generation method using CTGAN
- Conducted core study on Tabular GANs, Artificial neural networks, Regularization algorithms, Data pre-processing and optimization

National Institute of Technology - Calicut

Guide: Dr. Jayaraj P B

May'23-Aug'23

- Worked as a Research Assistant/Project Assistant on a SPARC Indo-US program-funded project titled “*Low-Cost GPU and AI-Based Computational Tool-Suite for Cancer Diagnosis and Radiotherapy Treatment*”, a collaborative initiative between NITC and the University of Utah (*May'25 -*)
- Worked on developing a **self-supervised deep learning framework for urine cytology detection using a contrastive learning approach**
- Successfully developed a new variant of YOLO object detection algorithm by backbone alteration and SimCLR based contrastive learning algorithm implementation, achieving higher accuracy than SOTA technology
- Core study on Self-supervised learning, Contrastive learning, Data augmentation, CNN, Various computer vision algorithms

Indian Institute of Technology (BHU) - Varanasi

Guide: Dr. Sanjay Kumar Singh

Feb'24-May'25

- Contributed in developing new explainable AI methodologies with major focus on CAM based methods for computer vision based models
- Proposed a novel mutual information based CAM method to weigh the feature maps with the mutual information between the image and the corresponding feature map
- Produced multiple first-authored manuscripts, titled MI CAM and MI-Grad-CAM, currently under review at reputed venues
- Core study on Explainable AI methodologies, CAM, Grad-CAM, Score-CAM etc.

Nanyang Technological University - Singapore

Guide: Dr. Yuvaraj Rajamanickam

Apr'24-Apr'25

- Worked on new deep learning algorithms for emotion recognition from EEG signal data based brain connectivity maps
- Brain connectivity maps were generated from EEG data and new graph based features were analysed for the classification of emotions between positive, negative and neutral
- Core study on Multimodal medical data analysis, EEG signal processing, Enhanced feature extraction method

In Association with Home Institution

Emotion Recognition from EEG Signals (In Association with Symbiosis CMIA)

Guide: Dr. Ankur Pandey (RGIPT), Dr. Venkateswarlu Gonuguntla (Symbiosis CMIA)

Sep'23-Feb'24

- Developed an **enhanced fusion network system based feature extractor for EEG signal fusion and corresponding recognition of emotion states**
- Core study on mathematical aspects of graphical EEG data processing and EEG signal analysis

Predictive Modelling of WQI on Limited Data (B.Tech Project)

Guide: Dr. Sajal Agarwal, Dr. Ankur Pandey

Sep'23-Nov'23

- Developed a **novel ensemble learning based WQI prediction system for limited data** with two major approaches - conditional GAN for synthetic tabular data generation and a novel imputation method for tabular data
- A novel imputation method was developed by ensembling GAIN and KNN Imputer with a squared loss based fusion ensemble

Teaching Experience

Rajiv Gandhi Institute of Petroleum Technology

Aug'23-Nov'23

Teaching Assistant

- Provided support to Fundamental of Electronics Engineering professor in developing instructional materials
- Conducted engaging and informative tutorial sessions, resulting in improved student comprehension
- Assisted in invigilating quiz exams and provided constructive feedback to students, contributing to their growth
- Developed strong communication and interpersonal skills through regular interaction with students and faculty.

Projects

IoT Powered Automated Dull Bit Grading System

Aug'23-May'24

Institute Funded Work

- Worked on detection of cracks on the surface and interior of drill bits by leveraging the traits of IMX477 camera module, Nvidia Jetson Nano, Sensors and Image processing methodologies and analyzing the possibilities of computer vision algorithms for automated crack detection and degradation grade classification
- Studied the use of Jetson Nano, IMX477 camera module, Image processing techniques
- Developed a completely automated system en route to a patent application

IoT Face Recognition Bot for Surveillance Applications

July'22-Sep'22

Guide: Dr. Sajal Agarwal

- Designed a smart AI robot using dlib library and espeak module in python that can recognize human faces. Threshold analysis was conducted as part of the optimization process
- Core study on Arduino, Raspberry Pi, Networking protocols, PiCam module, Face recognition using dlib
- Produced a conference paper at 6th International Conference on VLSI, Communication and Signal Processing (VCAS 2023)

Achievements

- Embassy-recommended for the **MEXT scholarship for graduate studies in Japan** (<2% acceptance rate)
- Awarded **Institute Gold Medal** for standing first in B.Tech in Electronics Engineering
- Secured All India **Rank 22978** in JEE advanced among 150,000 candidates
- Secured All India **Rank 28K** in JEE Mains (B. Tech) exam among 1.5 million candidates
- Secured an **all-India 4th position in New Generation Ideation Contest Organized by HPCL** for best research idea
- Secured internship opportunity at **TEEP@AsiaPlus Taiwan** program
- Selected for **SPARK Internship Program** by IIT Roorkee and the **SRF Program** by IASc-INSA-NASI
- Received Certificate of Merit by CBSE for **top 0.1 percentile in English Communication**
- Secured **Community Grant from Cartesi Labs**
- Achieved an overall band score of **8.0 in IELTS examination**

Leadership / Extracurricular

- Secured 1st position in TRABOTRON Robotics Competition organized by S&T RGIPT - Team Leader *May'22*
- Student DUGC representative
- Hosted and conducted podcasts on AI and Computer Vision with esteemed guests
 - Hosted 'Vision Unleashed: 10 Breakthroughs Shaping the Future of Computer Vision', with Dr. Sukant Khurana
 - Podcast Guest, Women in Math & STEM (WiMS) initiative, hosted by Impact Learners
- Represented College in Sports fest (UDGHOSH) conducted by IIT Kanpur in Football