

Faculty Profile



Dr. S. SATHISH BABU, Ph.D.
Assistant Professor – ECE

HIGHLIGHTS:

- Number of Publications: 7
- H-Index: 2
- I-10 index: 1
- Patents Published: 3

PROFESSIONAL LINKS:

- SCOPUS ID : 55005728100
- SCOPUS Link : <https://www.scopus.com/authid/detail.uri?authorId=55005728100>
- ORCID ID : 0009-0001-4720-0638
- Google Scholar ID : <https://scholar.google.com/citations?user=OKbhXhsAAAAJ&hl=en>
- Anna University Faculty ID : 2631311985
- AICTE Faculty ID : 1-43647697122
- LinkedIn : <https://www.linkedin.com/in/sathish-babu-sekar-a1573717>

PROFESSIONAL BACKGROUND:

- Teaching Experience till date : 6 years
- Industrial Experience : 10.5 years

Areas of Specialization:

- **5G/6G Communications and Networking**
 - Advanced **network architectures** and RAN **technologies** for 5G /6G systems (e.g., Quantumcommunication, Massive MIMO, and ISA).
 - **5G/6G network optimization**, including **resource allocation**, **spectrum management**, and **low-latency communication**.
- **Deep Learning for Wireless Applications**
 - Application of **deep learning techniques** for **channel estimation**, **signal detection**, and **interference management** in wireless communication systems.
 - Development of **AI-based algorithms** for **network optimization**, **traffic prediction**, and **adaptive communication protocols**.
- **GNSS Signal Processing**
 - Advanced signal processing techniques for **GNSS signal acquisition** and **tracking**, particularly with **BOC modulation** and other modern signal structures.
 - **Robust positioning and navigation algorithms** for **satellite navigation systems**, addressing challenges like multipath interference, jamming, and weak signal environments.

Research Interests:

- **Wireless Communications and Networking**
 - Spectrum occupancy analysis and optimization techniques for modern communication systems (e.g., 5G/6G).
 - Mobile Traffic Prediction.
- **Satellite Communications and GNSS Signal Processing**
 - Development of SDR including innovative acquisition and tracking algorithms for **GNSS signals** (e.g., BOC modulation).
- **Digital Signal Processing (DSP) and Algorithm Development**
 - Design of advanced signal processing techniques for **underwater positioning** and **satellite navigation** systems.
- **Artificial Intelligence and Machine Learning Applications**
 - Application of **AI** and **Deep Learning** for **sensor fusion** in autonomous transportation ecosystems.
- **IoT and Smart Infrastructure Solutions**
 - Development of **IoT-based civic infrastructure oversight and control platforms** for efficient urban management using 5G technologies.

- **Autonomous Transportation Systems**
 - Integration of **sensor fusion**, and 5G for **safe autonomous mobility**.
- **Patent and Innovation in Communication Technologies**
 - Development of **patented technologies** in IoT platforms, **smart medical devices**, and **AI-driven diagnostic systems**.

Patents Published:

- **Internet of Things Based Civic Infrastructure Oversight and Control Platform** (Patent No.: **202441051990**).
- **AI-Integrated Smart Medical Diagnosis Chair (SMACH)** (Patent No.: **202441097559**).
- **Detection of Dental Disease Using Convolutional Neural Network (CNN)** (Patent No.: **202441085313**).

Publications:

1. **S. B. Sekar** and K. Tamizhelakkiya, "Spectrum Data Monitoring based on Frequency Occupancies for Dynamic Spectrum Access," 2025 IEEE Future Networks World Forum (FNWF), Bangalore, India, 2025, pp. 1-6, doi: 10.1109/FNWF66845.2025.11317242.
2. **S. B. Sekar** and K. Tamizhelakkiya, "Polar Feature Based Convolutional Random Forest Classifier for Modulation Classification in Resource Constrained Application," 2025 IEEE Future Networks World Forum (FNWF), Bangalore, India, 2025, pp. 1-5, doi:10.1109/FNWF66845.2025.11317356.
3. Prabhu Chandhar, Tamizhelakkiya, **Sathish Babu**, Krishnakumar V, Sivakumar A, Vignesh G, and Viswanathan W, "**4G Spectrum Occupancy Analysis in Chennai-India**," *International Conference on Emerging Techniques in Computational Intelligence (ICETCI-2022)*, Aug. 25-27, 2022, Hyderabad, India.
4. Prabhu Chandhar, **Sathish Babu**, Tamizhelakkiya, "**Teaching and Learning the Principles of Wireless Communication Through Smartphone and CRFO**," *International Conference on Emerging Techniques in Computational Intelligence (ICETCI-2021)*, Aug. 25-27, 2021, Hyderabad, India.
5. **S. Sathish Babu**, S. Sengupta, K. Bandyopadhyay, "**Spectral Compatibility of BOC(5,2) Modulation with Existing GNSS Signals**," *Position, Location and Navigation Symposium (PLANS) 2012*, IEEE/ION, April 24-26, 2012.

6. **S. Sathish Babu**, S. Sengupta, K. Bandyopadhyay, “**Analysis of Secondary Short Codes for Satellite Navigation**,” *National Conference on Communications (NCC)*, IEEE, Feb. 3-5, 2012.
7. **S. Sathish Babu**, S. Sengupta, K. Bandyopadhyay, “**Zero Correlation Zone Sequences for Satellite Navigation**,” *INDICON 2011 Annual IEEE*, vol. [number], no. [number], pp. 1-4, Dec. 16-18, 2011.

Products Developed @ Chandhar Research Labs

- **5-Nines Radio™**: A highly scalable, real-time testbed for emulating end-to-end 4G/5G networks.
- **Deep Radio™**: A real-time platform for developing deep learning-based wireless applications.
- **Wi-Guy®**: A software-defined radio platform for scanning and capturing real-time signals (e.g., FM radio, GSM, LTE, GPS).
- **5G Enabled System Design for Autonomous Vehicles and Drones**: A design for integrating 5G technology into autonomous transportation systems.
- **5NR-IoT Bridge**: An interface unit for connecting and controlling IoT sensor networks with the 5-Nines Radio.

Course Reviewer @ GUVI Geek Network Pvt Ltd, IITM Research Park

- **Deep Learning and TensorFlow**
- **Arduino Electronics**
- **Raspberry pi for beginners**
- **Embedded C**
- **Raspberry pi specialization**
- **Fundamentals of semiconductor**
- **Analog Electronics**

Projects Completed @ SRIC, IIT Kharagpur

1. **Study of CDMA codes for Satellite Navigation**, Sponsor: Indian Space Research Organization (ISRO), Space Application Centre (SAC), Ahmedabad, October 2009 – March 2013

2. **Studies on new modulation techniques for Satellite Navigation**, Sponsor: Indian Space Research Organization (ISRO), Space Application Centre (SAC), Ahmedabad, April 2013– December 2015.

Conference Tutorials Delivered

- Deep Learning based Radio Frequency Signal Classification: Hands-On,” International Conference on Communication Systems and Networks, COMSNETS 2023, Bengaluru, India, Karnataka, India, 03 January 2023
- **"Application of Deep Learning in 5G and Beyond Communications - Hands On"**, International Conference on Emerging Techniques in Computational Intelligence (ICETCI 2022), Mahindra University, Hyderabad, Telangana, India, 25 August 2022.

Workshops / FDPs Delivered:

- **Three-Day Online FDP on "Applications of Deep Learning Techniques to 5G and Beyond Wireless Communication Techniques"**, Department of ECE, Bapatla Engineering College, 19-21 September 2022.
- **Five-Day Online FDP on "Applications of Deep Learning Techniques to 5G Wireless Communication"**, Vel Tech Rangarajan Dr. Sagunthala R & D Institute of Science and Technology, Chennai, Tamil Nadu, February 2022.
- **Five-Day Online FDP on "Signal Processing for 5G and IoT"**, IIIT Kalyani, West Bengal, September 2021.
- **Five-Day Online FDP on "Energy Efficient Techniques for 5G Wireless Communications"**, AICTE Sponsored National Level Short Term Training Programme, PICT, Pune, Maharashtra, India, December 2020.
- **Five-Day Online FDP on "Wireless Communications: Towards 5G Communications & Beyond with IoT, Machine Learning"**, AICTE Training & Learning (ATAL) Academy, in collaboration with Goa College of Engineering, Goa, India, November 2020.

Invited/Expert Talks

- **“6G Technologies: Dynamic Spectrum Access,”** Department of ECE, EGS Pillay Engineering College, Chennai, December 2025.
- **“Industrial Electronics in current era,”** Department of ECE, Saveetha Engineering College, Chennai, December 2025.
- **"Industrial Use Cases for 5G Advanced Towards 6G Applications",** Department of ECE, Saveetha Engineering College, Chennai, 26th April 2024.
- **"Fading Concepts of 4G/5G Wireless Systems Using Android Apps/Smartphone",** A one-day invited talk by Department of ECE and Innovation Club, Saveetha Engineering College, Chennai, September 2023.
- **Deep Learning-Based RF Signal Classification”,** A **three-day Online FDP** on *Applications of Deep Learning Techniques to 5G and Beyond Wireless Communication Techniques*, Department of ECE, Bapatla Engineering College, 19-21 September 2022.
- **“Deep Learning-Based RF Signal Classification”,** A **one-day Online Workshop** on *Deep Learning-Based Wireless Applications*, VIT Chennai, Tamil Nadu, 13 September 2022.
- **“Deep Learning-Based RF Signal Classification: (Hands-on)”**, A **five-day online Faculty Development Program** on *Applications of Deep Learning Techniques to 5G Wireless Communication*, Vel Tech Rangarajan Dr. Sagunthala R & D Institute of Science and Technology, Chennai, Tamil Nadu, 12 February 2022.
- **“Demonstration of 5-Nines Radio: A 4G/5G Testbed”**, A **five-day online Faculty Development Program** on *Applications of Deep Learning Techniques to 5G Wireless Communication*, Vel Tech Rangarajan Dr. Sagunthala R & D Institute of Science and Technology, Chennai, Tamil Nadu, 08 February 2022.
- **“Overview of 5G and Beyond Cellular Systems”**, A **five-day online Faculty Development Program** on *Applications of Deep Learning Techniques to 5G Wireless Communication*, Vel Tech Rangarajan Dr. Sagunthala R & D Institute of Science and Technology, Chennai, Tamil Nadu, 08 February 2022.
- **“Demonstration of 5-Nines Radio: A 4G/5G Testbed”**, A **five-day online FDP** on *Signal Processing for 5G and IoT*, IIIT Kalyani, West Bengal, 10 September 2021.

- **“Understanding the Concepts of 4G/5G Systems Using Smartphone and CRFO: A Hands-on Training”**, A five-day online FDP on *Signal Processing for 5G and IoT*, IIIT Kalyani, West Bengal, 09 September 2021.
- **“Deep Learning for RF Signal Classification”**, A five-day online FDP on *Signal Processing for 5G and IoT*, IIIT Kalyani, West Bengal, 07 September 2021.
- **“Hands-on Deep Learning for RF Signal Classification”**, Value Added Course on *Latest Trends in 5G and Applications*, HKBK College of Engineering, Bengaluru, Karnataka, 13 August 2021.
- **“Future of Artificial Intelligence”**, A one-day online Invited Talk by Department of ECE, Saveetha Engineering College, Chennai, Tamil Nadu, 01 June 2021.
- **“Demonstration of 5-Nines Radio: A 4G/5G Testbed”**, AICTE Sponsored National Level Short Term Training Programme on *Energy Efficient Techniques for 5G Wireless Communications*, PICT, Pune, Maharashtra, India, 11 December 2020.
- **“Deep Learning for RF Signal Classification”**, AICTE Training & Learning (ATAL) Academy Online Faculty Development Programme on *Towards 5G Communications Beyond with IoT, Machine Learning*, Goa College of Engineering, Goa, India, 25 November 2020.
- **“Introduction to 5G Core Network Architecture”**, AICTE Training & Learning (ATAL) Academy Online Faculty Development Programme on *Towards 5G Communications & Beyond with IoT, Machine Learning*, Goa College of Engineering, Goa, India, 24 November 2020.
- **“Demonstration of Fading Impairments in Mobile Communication”**, AICTE Training & Learning (ATAL) Academy Online Faculty Development Programme on *Towards 5G Communications & Beyond with IoT, Machine Learning*, Goa College of Engineering, Goa, India, 23 November 2020.

Conferences / Seminars / Workshops Attended:

- IEEE RAS, EMBS and IAS, EDS Sponsored FDP on **“Cutting-Edge Innovations for Next-Generation Modern Healthcare Systems (Hybrid)”** Organized by Saveetha IEEE Student Branch, March 2026

- One Week FDP on “**IoT Using raspberry Pi and PLC**”, June 2025
- Six-Day AICTE-ATAL Sponsored FDP on "**Integrating Machine Learning & Deep Learning in Real-Time IoT Systems**," December 2024.
- Five-Day Hands-On Training Boot Camp on **Drone Technology (DRESTIEN 24)**, organized by SEC and IIT, July 2024.
- Two-Day Workshop on "**APR (Auto Place and Route) Flow – Quick Review on Cadence Strategies**" July 2024.
- **Awareness Programme on Intellectual Property Rights (IPR)**, organized by IPR Cell, National Institute of Technology Puducherry, 20 July 2019.
- **Five-Day Quality Improvement Programme on "Instructional Design and Delivery System"**, organized by National Institute of Technology Puducherry, Karaikal, 04-09 December 2018.
- "**Microwave Communication, Navigation and Surveillance: Fundamentals and Applications**", Continuing Education Programme (CEP), IIT Kharagpur, 04-09 May 2010.