

Dr. G. KEERTHANA

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Profile Summary

I am an academician and an active researcher with over **14 years of experience** in **Electronics and Communication Engineering**. I 'am currently serving as an **Associate Professor** in the department of **Electronics and Communication Engineering** at **Jawaharlal College of Engineering and Technology, Kerala**, my areas of specialization include, **Wireless Communication, Wireless Sensor Networks, and Network Security**. I hold a **Ph.D. from Anna University**, my research work focused on the **enhancement of robustness and security of scale-free wireless sensor networks**. My journey in academia has been enriched with **teaching, research, and administrative roles**, along with **multiple funded projects, patents, and publications in SCIE and Scopus-indexed journals**.

Experience (14 Years)

- Worked as an **Associate Professor** in the Department of **Electronics and Communication Engineering** at **Jawaharlal College of Engineering and Technology, Palakkad, Kerala Affiliated to APJ Abdul Kalam Technological University, Kerala** from 2-May-2024 to 17-August-2026.
- Worked as an **Associate Professor** in the Department of **Electronics and Communication Engineering** at **SCMS School of Engineering and Technology, Karukutty, Kerala Affiliated to APJ Abdul Kalam Technological University, Kerala** from 6-March-2023 to 31-January-2024.
- Worked as an **Assistant Professor** in the Department of **Electronics and Communication Engineering** at **Rajagiri School of Engineering and Technology, Kochi, Kerala Affiliated to APJ Abdul Kalam Technological University, Kerala** from 01-November-2022 to 28-February-2022.
- Pursued **Full Time Ph.D in Information and Communication Engineering** at Anna University Chennai from July-2017 to May-2022 (*Research Experience-4.11 Years*).
- Worked as an **Assistant Professor** in the **Department of Electronics and Communication Engineering** at **Sri Krishna College of Engineering and Technology, Coimbatore** from June-2012 to May-2017(*Teaching Experience-5 Years*).

Academic Profile

Course	Institution	University/Board	Month/Year of Passing	Percentage/CGPA
Ph.D (Information & Communication Engineering)	Excel Engineering College, Namakkal	Anna University Chennai	May - 2022	NA
M. Tech (Applied Electronics)	Karunya University, Coimbatore	Karunya Deemed University	May - 2012	8.3
B.Tech. (Electronics & Communication Engineering)	Coimbatore Institute of Engineering and Technology, Coimbatore	Anna University Chennai	April - 2010	72%
HSC	St Marys' Girl's Hr. Sec. School, Coonoor	State Board	April - 2006	84%
SSLC	St Marys' Girl's Hr. Sec. School, Coonoor	State Board	April - 2004	95%

Key Achievements

- **Research & Funding** – Received **₹1,00,000 AICTE grant** for an **ATAL FDP (2024)** and is a **Co-Investigator** in a **₹39.22 lakh DST-funded AI-based Neurofeedback project** (Awaiting approval).
- Successfully led the Department of ECE(NBA Coordinator) with effective coordination and culminating in the achievement of **NBA accreditation for a period of three years and also secured the highest score (692/1000) in the history of NGI.**
- Recognized as an **Approved Research Supervisor** by **APJ Abdul Kalam Technological University** from 2024 onwards.
- **Patents & Publications** – Hold **UK, Australian and Indian patents** that are **filed, published and granted** respectively.
- Have published papers in **SCIE & Scopus-indexed journals** and have also authored **3 textbooks & a Scopus book chapter**, have presented papers in various National & International Conferences and Journals.
- **Academic & Leadership Roles** – **Session Chair**, had delivered talk sessions in the areas of **Universal Human Values & Networks**, **Senior member in DAC & PAC**, Faculty In-charge of the department's Association,
- **Awards & Recognitions** – **First rank in Taluk (SSLC)**, **English topper (HSC & SSLC)**, **IEEE paper contest winner**, and **district-level table tennis champion.**

Key Skills

- **Research & Innovation** – Expertise in **Wireless Networks, Network Security, and AI-based Optimization Algorithms.**
- **Technical Proficiency** – **MATLAB, NS2, Embedded C, Arduino, Raspberry Pi.**
- **Academic Leadership** – NAAC/NBA contributions, syllabus development, and faculty mentoring.
- **Effective Communication** – Strong **writing, presentation, and team collaboration skills.**
- **Event Coordination** – Organized **international conferences, workshops, and FDPs.**
- **Universal Human Values (UHV) Trainer** – Certified by **AICTE**, had delivered sessions on **self-awareness and ethical mentoring.**

Ph.D Research Details

University : Anna University, Chennai

Research Type : **Full-Time Ph.D**

Research Status : Ph.D Viva Voce Completed on 25/05/2022

Research Department: Information and Communication Engineering

Research Area : Wireless Communication

Research Title : Improving the Robustness and Security in a Real Time and Scale-Free Wireless Sensor Network

Research Objective : The objectives of this research work have been listed below:

- To enhance the robustness of the wireless sensor network by means of incorporating a new modelling methodology called the Sequential Probability Ratio Test (SPRT) that aids in the generation of scale-free network topologies.
- To enhance the robustness of free scale networks against the Malicious Attacks (MA) by making use of a Robust Hybrid Artificial Fish Swarm Simulated Annealing Optimization (RHAFS-SA) Algorithm with no change in the degree distributions.
- To enhance the robustness of the scale free network architectures by a new Quasi-Oppositional Artificial Flora (QOFA) Algorithm with respect to the network attributes.

Supervisor ship

- Recognized as an Approved Research Supervisor by APJ Abdul Kalam Technological University from 2024 onwards.

Administrative Roles

- Actively contributed to the **NAAC and NBA committees** within the department.
- Serving as Institute IQAC Coordinator at JCET from July 2025.
- Faculty in charge of **Quiz, Debugging, and Paper Presentation** events at annual technical symposiums.
- Served as an **Internal and External Examiner** for Anna University Board Examinations.
- Had been the **Department Project Coordinator and Industrial Visit In-Charge**.
- Coordinated the organization of **various international conferences**.
- Contributed as a **member of the Autonomous Institution Syllabus Framing Committee**.
- Had taken up lead roles in the **event planning and cultural organizing committees**.

Research Grant Received

- Received a sum of **Rs. 1,00,000/-** from **AICTE** to conduct a **AICTE Sponsored Six-day ATAL Faculty Development Program** titled “**Indian Health, Wellness and Psychology (including Ayurveda)**”, 2024.

Funded Projects

S. No.	Project Title	Funding Agency	Project Cost	PI/ CO-PI	Project Status
1	AI based Neurofeedback system for Improving Working Memory in adolescents with Attention – Deficit Hyperactivity Disorder (ADHD)	DST	39,22,187	CO-PI	Waiting for Approval

Research Publications

International Patent

1. Filed and Granted an **UK Patent** titled “**AI-Driven Cloud Data Encryption Device**”, 2026 (Design number: 6494521).
2. Granted an **UK Patent** titled “**Blockchain Based Device for Communication**”, 2025 (Design number: 6409866).
3. Filed and Granted an **UK Patent** titled “**Wearable Disaster Emergency Communication Device**”, 2024 (Design number: 6409866).

4. Filed and Granted an Australian Patent titled “**An IoT Based Self Phased Analysis of Adverse Effects of Covid Recovered Patient**” on 05th May 2021 (Application No.:20201101599).
5. Filed and Granted an Australian Patent titled “**A Smart Methodology to Track the Spread of Pandemic and Sanitizing at Regular Intervals**” on 27th January 2021 (Application No.:2020103763).

Indian Patent

1. Filed and published an Indian patent titled “Context-Aware Federated Learning Framework with Privacy-Preserving Aggregation”, 2026. (Application No.: 202541128757).
2. Filed and published an Indian patent titled “IOT Enabled device for warning people of electrically short-circuit poles in public places”, 2025, (Application No: 202541009045).
3. Published an **Indian patent** titled “Intelligent Intravenous Therapy Bag Monitoring System for Enhanced Patient Care”, **2025**.
4. Published an **Indian patent** titled “Intelligent Alcohol Detection and Monitoring System Using IoT Technology for Real-Time Monitoring and Alerts”, **2025**.
5. Published an **Indian patent** titled “Intelligent Access Control System for Seamless Door Unlocking in Modern Environments”, **2025**.
6. Filed and published an Indian patent titled “System and Method to Enhance the Robustness of Scale Free Networks in IoT Systems using Quasi-Oppositional Artificial Flora Algorithm” (Application No.: 202041029578 A).
7. Filed and published an Indian patent titled “An Automated IoT Based Agriculture Monitoring System with Plurality of Sensors to detect Parameters related Thereof” (Application No.: 2019410449558).

Text Books/Chapter Publications

- Published a book chapter “**Guardian wheel – An advanced wheel chair for disabled people**”, “Recent Advancements in Artificial Intelligence, Computational intelligence and Inclusive Technologies” Taylor and Francis, UK. (Scopus)
- Published a Textbook titled “**Artificial Intelligence and Robotics**”, Scientific International Publishing House, 2024 (ISBN No.: 978-93-6674-007-2).
- Published a Textbook titled “**Real-Time Embedded Systems**”, Forschung Publications, 2024 (ISBN No.: 978-93-91772-22-2).

- Published a Textbook titled “**ECE Essential: MCQ Edition**”, Beyond Line Publisher, 2024 (ISBN No.: 978-93-95659-28-4).
- R. Satheesh Kumar, **Ms. G. Keerthana**, "Enabling Artificial Intelligence and Cyber Security in Smart Manufacturing", "Artificial Intelligent Techniques for Wireless Communication and Networking", **Scopus Book Chapter** (Accepted for Publication).

SCIE/Web of Science Indexed Publications

1. **G. Keerthana**, Anandan P & N. Nandhagopal 2020, ‘Robust Hybrid Artificial Fish Swarm Simulated Annealing Optimization Algorithm for Secured Free Scale Networks against Malicious Attacks’, Computers, Materials & Continua, Tech Science Press Publication, vol.66, no.1, pp.903 917, (DOI:10.32604/cmc.2020.012255) (**SCIE**).
2. **G. Keerthana**, Anandan P & N. Nandhagopal 2020, ‘Enhancing the Robustness and Security against Various Attacks in a Scale: Free Network’, Wireless Personal Communications, Springer Publication (DOI: [10.1007/s11277-020-07356-5](https://doi.org/10.1007/s11277-020-07356-5)). (**SCIE**).
3. **G. Keerthana.**, et al. “Acute myeloid leukaemia classification in high resolution blood smear image using hybrid attention-based deep convolutional belief network”. Manuscript submitted for publication to International Journal of Computational Methods, **World Scientific Publishing Co. Pvt. Ltd. (SCIE-Under Review)**.
4. **G. Keerthana** et. al., “HSA-MSGAN: Hybrid Stacked Attention enabled Multi-Metric Structured Generative Adversarial Network for Medical Image Augmentation”, submitted for publication to International Journal of Signal, Image and Video Processing, **Springer (Springer London / Springer Nature)**. (**SCIE-Under Review**).
5. **G. Keerthana** et. al., “DT-CGDNet: Cross-Modality Image Translation using Discrete Transform Diffusion Conditional Generator Discriminator Network with Medical Images”, submitted for publication to International Journal of Advances in Computational Mathematics, **Springer Nature. (SCIE-Under Review)**.
6. **G. Keerthana.**, et al. (2026). “SLMA-BiNet: A Multimodal Approach for Alzheimer’s Disease Classification”. Manuscript submitted for publication to Cognitive Neuropsychiatry, **Taylor & Francis Group (SCIE–Under Review)**.
7. **G. Keerthana.**, et al. (2026). “IoT-Enabled Multimodal Authentication Based Dual Attention Enabled Deep Bidirectional Network for Leukaemia Detection with Blood Smear Images”. Manuscript submitted for publication to Soft Computing, **Springer Nature (SCIE–Under Review)**.

International Conferences

1. **G. Keerthana et al.** “Developing IoT Healthcare Networks based on Cloud-Based Big Data analytics to Maximize Performance and Security”, published in the 4th IEEE International Conference on Intelligent Data Communication Technologies and Internet of Things (IDCIoT-2026), Kerala, India (**Scopus**).
2. **G. Keerthana et al.** “Accident Detection and Prevention Systems for Smart and Electric Vehicles Using IoT-Enabled Techniques”, published in the 4th IEEE International Conference on Intelligent Data Communication Technologies and Internet of Things (IDCIoT-2026), Kerala, India (**Scopus**).
3. **G. Keerthana et al.** “Smart Protective Headgear with Embedded Sensors for Impact Detection and Alcohol Intoxication Monitoring” published in the 4th IEEE International Conference on Intelligent Data Communication Technologies and Internet of Things (IDCIoT-2026), Kerala, India (**Scopus**).
4. **G. Keerthana et al.** “IoT – Enabled Smart Microclimate Control Robot for sensitive environments with real – time sensor monitoring”, published in the 6th International conference on pervasive computing and social networking (ICPCSN 2026), Kerala, India (**Scopus**).
5. **G. Keerthana et. al.** “An Effective Method for the Detection of Tuberculosis using Artificial Intelligence”, published in the (3rd IEEE International Conference on Device Intelligence Computing and Communication Technologies DICCT 2025), (**Scopus**).
6. **G. Keerthana et al** “Enhanced Integrated System for the Prediction of High Blood Pressure”, published in the (Springer Conference on Advances in Communication Networks & Systems CoaCoNS 2025), (**Scopus**).
7. **G. Keerthana et al** “An AI – Powered Web Application for Automating Brain Tumor Identification”, published in the (2nd IEEE International Conference on Trends in Engineering Systems and Technologies (ICTEST – 2025), (**Scopus**).
8. **G. Keerthana, & P. Anandan** 2018, ‘A Survey on Security Issues and Challenges in Mobile Ad-hoc Network’, EAI Endorsed Transactions on Energy Web, vol. 5 (20). (DOI: [10.1007/s11277-020-07356-5](https://doi.org/10.1007/s11277-020-07356-5)). (**Scopus**).
9. R. Satheesh Kumar, N. Krishnaraj and **G. Keerthana** “Highly Energy Efficient and Scalable Distributed Clustering Procedure for Dense Wireless Sensor Networks”, Asian Journal of Applied Science and Technology (AJAST), Volume.1, Issue.9, pp.550-558, December 2017.
10. R. Satheesh Kumar, N. Krishnaraj and **G. Keerthana** “Procuring Cloud from Ddos Attacks Using Transgression Revelation System”, International Journal of Computer Science and Engineering Communications, Volume.5, Issue.5, pp.1752-1760, September 2017.

11. R. Satheesh Kumar, Boseline Prabhu and **G. Keerthana** "A Literature Review on Automatic Composition of Web Services", International Journal of Technology in Computer Science and Engineering, Volume.4, Issue.2, pp.4081-4086, June 2017.
12. R. Satheesh Kumar, N. Krishnaraj and **G. Keerthana** "Assessment of Quality of Service in Communication Network and Evaluating Connectivity Among IP Networks", Asian Journal of Applied Science and Technology (AJAST), Volume.1, Issue.3, pp.319-322, April 2017.
13. S.V. Saranya, **Ms. G. Keerthana** "An Efficient Code Compression Technique for Embedded Systems", International Journal of Innovative Research in Science, Engineering and Technology, Volume-5, special Issue-4, March-2016.

Session Chairs

- Session Chair for "National Conference on Emerging Trends in Science and Engineering - NCETSE 2025," held at Nehru College of Engineering and Research Centre, Thrissur, Kerala.

Invited Talks

- Handled a lecture session for the topic "UHV: Self-Exploration & Self-Awareness", held at Sahridaya College of Engineering and Technology, Thrissur, Kerala.
- Handled a lecture session for the topic "Universal Human Values Based Mentoring of Students", held at Hindusthan College of Engineering and Technology, Coimbatore, Tamilnadu.
- Handled a lecture session for the topic "UHV: Harmony in the Individual, Family & Society", held at Adi shankara Institute of Engineering and Technology, Kochi, Kerala.
- Handled a lecture session for the topic "Network Security and its applications", held at P.A College of Engineering and Technology, Pollachi, Tamilnadu.
- Handled a lecture session for the topic "How to improve Robustness in Network Communication", held at SRM Institute of Science and Technology, Chennai, Tamilnadu.

Membership in Professional Bodies

- **Senior Member of IEEE** (Institute of Electrical and Electronics Engineering-100152428).
- Life Member of IAENG (International Association of Engineers-162314).
- Life Member of the IRED (Institute of Research Engineers and Doctors-AM10100053323).
- Life Member of SDIWC (The Society of Digital Information and Wireless Communication-12365).

UHV Certifications

- Completed the 5-day Online FDP on the theme “Inculcating Universal Human Values in Technical Education” organized by All India Council for Technical Education (AICTE) from 19th December to 23rd December 2022.
- Completed the 6-day Online UHV-II FDP organized by All India Council for Technical Education (AICTE) from 13th February to 18th February 2023.

Achievements

- **First Rank in Taluk level in the SSLC public examination, The Nilgiris.**
- Was the school **topper in English** in both, the **HSC** and the **SSLC public examinations.**
- Was the recipient of **proficiency awards in academics** from **standard eight onwards.**
- Was placed **second** in the **district level table tennis tournament** organized by the **Government of Tamil Nadu** in the academic year 2003-2004.
- Won **first prize in paper presentation** contest held at Sengunthar College of Engineering, Erode. (**Titled-Nanorobotics in the treatment of artery occlusion**)
- Won **first prize in the IEEE paper presentation** contests.
- Had participated in various paper and project presentation contests at the intercollegiate levels and have won laurels.

Personality Highlights

- Well-founded fundamentals with commanding leadership qualities.
- Possess good communication and impressive Interpersonal skills.
- Possess excellent written and verbal skills.
- Good co-ordination and co-operation with the team.
- Dynamic team player and sincere in deadline essential delivery.

Academic projects

UG Project

Title: Improved Security for ATM System

The basic aim of the project is to **improve the existing security in ATM systems.** The project sets sight on eliminating the use of conventional Credit card transaction system. The approach used here is face recognition with Eigen faces using principal component analysis. Eigen faces approach is a principal component analysis method, in which a small

set of characteristic pictures are used to describe the variation between face images. Experimental results using **MATLAB** are demonstrated.

This method aims at rectifying certain disadvantages of ATM, like,

- i) **Card theft**
- ii) **Unknown transaction**
- iii) **Multiple User access**

The **Eigen face** approach **does provide a practical solution** that is well fitted to the problem of face recognition. It is fast, relatively simple, and has been shown to work well in constrained environment.

PG Project

Title: Speaker Recognition using AM-FM signal decomposition

The basic aim of this project is to suggest **an iterative method for the accurate estimation of amplitude and frequency modulations (AM–FM)** in time-varying multi-component quasi-periodic signals such as voiced speech. Based on the deterministic representation, the properties of the model are revealed showing that such a representation is equivalent to a time-varying quasi-harmonic representation of voiced speech. This representation can be used for the estimation of amplitude and frequency modulations.

An adaptive algorithm for nonparametric estimation of AM–FM components in voiced speech is suggested. Based on the estimated amplitude and frequency components, a high-resolution time–frequency representation is obtained. The software used is **MATLAB 7.6** and the **database are CHAINS corpus**. Here three models are used for AM-FM estimation namely the **Quasi Harmonic Model, Sinusoidal model and Adaptive Quasi Harmonic Model**, the best model among these three is highlighted and hence used in speaker recognition.