

# Dr. Geetha Radhakrishnan

## Assistant Professor (Computer Science), RARS(SZ), Vellayani

### Address:

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## Summary

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Driven by a passion for computer science, my journey began with an ICAR project on Expert Systems, evolving into a Ph.D. focused on Intelligent Multi-Agent-Based Security Systems in Cloud environments, solidifying my expertise in AI, ML, and IoT. With a background in ethical hacking, security analysis, and Oracle database administration, I stay at the forefront of tech advancements, concentrating on AI and ML interventions. Ongoing certifications in Software Engineering for Cloud, Blockchain, and IoT underscore my commitment to continuous learning. Currently, my research explores AI and ML techniques in developing a plant nursery management system. In diverse roles like IT Nodal Officer, website developer, and Android app developer, I enhance technological infrastructure, while my published research on digital twin technology showcases my active contributions to the field. As a Certified Ethical Hacker and Security Analyst, I am dedicated to leveraging AI and IoT, powered by Python, to advance the tech community.

## Research Highlights

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- Working towards the development of a plant nursery management system using AI and ML techniques
- Working towards the creation of a decentralized and structured knowledgebase with data and rules related to pest and disease management in the vegetable crops of Kerala

## Experience

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Joined Kerala Agricultural University as an Assistant Professor (Computer Science) in the year 1995. Took a sabbatical in 1999 and rejoined the university in 2012.

## Education

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- Graduation - Bachelor of Mathematics, Kerala University (1992)
- Post Graduation – Master of Computer Application, Bharathiar University (1995)
- Ph.D in Computer Science, Bharathiar University (2021)

## Certifications

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- Certificate Holder ORACLE 7, Digital Computers, India 1994
- Certified Ethical Hacking (CEH), EC Council, 2015
- EC Systems Analyst (ECSA), EC Council, 2015
- Oracle Database SQL, Oracle Workforce Development Program, 2017
- Oracle Database 11g: program with PL/SQL, Oracle Workforce Development Program, 2017
- Oracle Database 11g: administration, Oracle Workforce Development Program, 2017
- Java Programming, Oracle Workforce Development Program, 2017
- Artificial Intelligence, Machine Learning, Deep Learning and Applications, EduXLabs, 2020

## Ongoing Certification (July 2022-June 2024)

- **Advanced Certification in Software Engineering for Cloud, Blockchain & IoT**, by the Centre for Continuing Education, **Indian Institute of Technology Madras**

## Technical Proficiency

Programming Languages	Python, C++, C, R
Web Designing Language	Hyper Text Markup Language (HTML)
DBMS	MySQL, ORACLE 7, NoSQL, MongoDB
Operating Systems	Kali Linux, Unix, Windows, DOS
Hypervisor	VMware, Virtual Box
Network Security Tools	Nmap, Metasploit, Open Vas, Nessus
Web Application Security Testing Tools	Recon-ng, SQL Map
Networks	LAN administration and trouble-shooting
Agent Platforms	Smart Python Agent Development Environment (SPADE)
Cloud Platforms	AWS, Google Cloud
Bioinformatics Tools	BLAST, FASTA, Clustal, RasMol, PyMol, ExPASy, PDB
App Development Software	Flutter
Cloud Platform	Amazon Web Services (AWS)
Blockchain development	Ethereum

## Area of Specialization

Artificial Intelligence and Machine Learning based interventions in agriculture, Software development, IoT devices and networking, IoT Cloud Processing and Analytics, Cloud Managed Services, Cloud DevOps, Cyber Security

## Awards & Recognitions

- Best Paper award *Enhancing Fertigation Efficiency In Vegetable Crops Under Controlled Environments Through Digital Twin Technology*, BIOZION: International Biotechnology Conclave, 2023
- Recognition- EC Council Certified Ethical Hacker since 2016 – valid until 2024 (revalidated every 3 years)
- Recognition - EC Council Security Analyst since 2016 - valid until 2024 (revalidated every 3 years)

## Research Projects

### Ongoing

1. Development of a Smart Nursery Management System using IoT & ML Techniques. Funded by Planning Board, Government of Kerala (2022 onwards)
2. Development of an AI-Based Advisory System for Soilless Non-Hydroponics Cultivation of Vegetable Crops in Rooftop Farming. Funded by Planning Board, Government of Kerala (2024 onwards)

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## Completed

1. Karshaka Santhwanam Android app development. Funded by the Planning Board, Government of Kerala. Uploaded onto the Google PlayStore 2021-2022
  2. Technological Upgradation @ RARS, Funded by Planning Board, Government of Kerala (INR 7L) 2020-2022
  3. Upgradation of computer lab @ CoA Padanakkad 2019
  4. National Science Day, Funded by Kerala State Council for Science Technology and Environment (INR 0.20L) 2015
  5. Biotechnology Colloquium as Co-PI, Funded by Kerala State Council for Science Technology and Environment 2014
  6. IGNITE 2014- the National Science Day 2014
  7. Development and Field Testing of Expert Systems as an Aid to Agricultural Extension Work 1996-1999
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## Publications

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### Journal Articles

1. Geetha Radhakrishnan and Dr. K.L. Shunmuganathan (2018), Comparative Study of ML Classification with SMAS CSO-SVM, *Elsevier: Journal Of Advanced Research In Dynamical And Control Systems*, Vol.10 (7) Special Issue, p.p. 525-533
2. Geetha Radhakrishnan & K.L. Shunmuganathan (2018), Intelligent query Processing from Biotechnological Database Using Co-operating Agents in a Secure Cloud Environment, *ARN Journal of Engineering and Applied Sciences*, Vol. 10(13), April, p.p. 2511-2518
3. Geetha Radhakrishnan & K.L. Shunmuganathan (2018), Cloud Data Storage Security Structure with Multi-Agent System Architecture, *International Journal of Advanced Research*, Vol. 6(11), November, p.p. 1030-1034
4. Geetha Radhakrishnan & K.L. Shunmuganathan (2018), Comparative Study of JADE and SPADE Multi-Agent System, *International Journal of Advanced Research*, Vol. 6(11), November, p.p. 1035-1042

### Accepted for Publication (Apr 2023)

5. **Geetha Radhakrishnan**, Varun V.V., Jaichandran R. (2023). Digital Twin Technology For Optimum Fertigation Of Vegetable Crops In A Controlled Environment, A Springer Nature Springer Nature Computer Book Series
6. Jaichandran R., Sharumathi A., Mohankumar P., **Geetha Radhakrishnan** (2023). A prime number used to secure data through the BR-PTT-23 Method, Springer Nature Computer Book Series.

### Technical Bulletins/Practical Manuals

1. Geetha Radhakrishnan (2023). *IoT Concepts in Agriculture*, Published by the Centre for e-Learning, Kerala Agricultural University

### Popular Articles

1. 'Biotechnology Yugam', Kalpadhenu, Jan-Mar 2015, page 58-59
2. 'Talking Bioinformatics', The Nation, Malawi, June 2013

## **Book In Press**

Geetha Radhakrishnan and Linitha Nair (2023). Agriculture in the 5G Era, Kerala Agricultural University

## **Radio Talk**

Njangalum Krishiyilekku - AIR - Vivara Sangethika Vidhya Kaarshika Meghalayil - Dr. Geetha Radhakrishnan

## **Paper Presentation**

1. *Enhancing Fertigation Efficiency In Vegetable Crops Under Controlled Environments Through Digital Twin Technology*, BIOZION: International Biotechnology Conclave, 2023 (Received Best Paper Award)
2. *Twin Technology for Optimum Fertigation of Vegetable Crops in a Controlled Environment Through Exploitation of IoT and DL Techniques*, International Conference on Artificial Intelligence & Digital Twin Technology IconAIDTT 2023
3. *A Prime Number Used To Secure The Data Through BR-PTT-23 Method*, International Conference on Artificial Intelligence & Digital Twin Technology IconAIDTT 2023
4. *Intelligent Query Processing from Biotechnological database using co-operating Agents based on FIPA standards and Hadoop, in a Secure Cloud Environment*, International Conference on Advanced Computing & Communication Systems – ICACCS 2017

## **Poster Presentation**

1. *Technological Interventions for Smart Urban Farming: Revolutionizing Agriculture*, International Seminar on Sustainable Urban Agricultural Systems and Community Resilient Cities, on March 22nd and 23rd, 2024. at the College of Agriculture, Vellayani

## **MOOC Course Released**

1. Development and release of the MOOC course IoT in Agriculture, Centre for e-Learning, Kerala Agricultural University

## **Android App Released & Uploaded to Google PlayStore**

1. Karshaka Santhwanam App

## **Seminars/Symposia/Training/Workshops/Conferences Organized**

1. International Seminar on Sustainable Urban Agricultural Systems and Community Resilient Cities, on March 22nd and 23rd, 2024. at the College of Agriculture, Vellayani (Member of the Program Committee)
2. KAU – CORTEVA International Plant Science Symposium 2024 conducted on the 18<sup>th</sup> – 19<sup>th</sup> of January 2024 at the College of Agriculture, Vellayani (Chairperson of the Exhibition Committee)
3. BioZion International Biotechnology Conclave at College of Agriculture, Trivandrum, Kerala Agricultural University (2023) (Convenor of the Career Connect 2023 program)
4. Illuminate 2023 workshop, organized by E-Cell CoA Vellayani
5. Online training for farmers, "Karshakarkkoru Santhwanam: Noothana Sangethika Vidhyayiloode" 2021 (during the lockdown period)
6. Online Seminar on Smart Farming Systems, organized by the Regional Agricultural Research Station (Southern Zone), Vellayani on 23-03-2021, Program co-ordinators Dr. Sreekala G.S., **Dr. Geetha Radhakrishnan**

7. Zonal Research and Extension Advisory Committee (ZREAC), organized by the Regional Agricultural Research Station (Southern Zone), Vellayani since 2020 (member of the organizing committee)
8. National Webinar on Spice Improvement, Processing, and Marketing, organized by the Regional Agricultural Research Station (Southern Zone), Vellayani on 7<sup>th</sup> and 8<sup>th</sup> October 2020 (member of the organizing committee)
9. Science Symposium-GENEius 2015 as part of the National Science Day celebrations at the College of Agriculture, Vellayani. Funded by KSCSTE. (Principle Co-ordinator)
10. Science symposium IGNITE on 26-04-2014 as part of National Science Day celebrations. Funded by KSCSTE (Principle Co-ordinator)
11. The Biotechnology Colloquium organized at the College of Agriculture, Vellayani in 2014 (Associate Co-ordinator)

## **Trainings Attended**

1. Applied NLP and Unstructured Data Analytics, Organised and conducted by: the International Centre for Free and Open-Source Software (ICFOSS); in association with Kerala State IT Mission (KSITM), from 4<sup>th</sup> to 17<sup>th</sup>, May 2022
2. Advances in Deep Learning for Multi-Media Signal Processing, organized by IEEE Signal Processing Society GS, IEEE Computer Society, IEEE GeoScience & remote Sensing Society along with IEEE SCET student branch 3<sup>rd</sup> to 5<sup>th</sup>, 2022
3. Software Requirement Specification @ IITM-K, Thiruvananthapuram, 2018
4. SECURE IT User Training @ IITM-K Thiruvananthapuram, 2015
5. Certified Ethical Hacking, @ IITM-K Thiruvananthapuram 2015

## **Student Guidance (Major Advisor/ Advisory Committee member)**

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**Ph. D** Within KAU: Ongoing: 1 (advisory committee member)

## **Other Institutional Responsibilities**

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1. Resource person for the course *Python Programming – the Basics*, offered by the Centre for e-learning, KAU, Thrissur
2. Faculty Mentor of the Entrepreneurial Cell (E-Cell), College of Agriculture, Vellayani (2023 onwards)
3. WebMaster for the website of the College of Agriculture, Vellayani, from 2023 onwards
4. WebMaster for the website of the Regional Agricultural Research Station (Southern Zone) [RARS (SZ)], Vellayani, from 2020 onwards and had the same responsibility at the College of Agriculture, Padannakkad, Kasargode during the period 2018-2021
5. IT Nodal Officer, RARS(SZ), Vellayani, Thiruvananthapuram, (2021 onwards) and was the IT nodal officer at the College of Agriculture, Padannakkad, Kasargode during the period 2018-2021
6. Member of the Internal Complaints Committee, RARS(SZ), Vellayani, (2021 onwards)
7. In-Charge of the technological upgradation at RARS(SZ), Vellayani, Thiruvananthapuram, 2020 onwards
8. Established a new and improved computer Lab at the College of Agriculture, Padannakkad (2019)
9. Evaluator of the Young Innovators Programme (YIP), organized by the Kerala Development and Innovation Strategic Council (KDISC), 2021-2022

## **Membership in Professional Associations**

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1. Annual membership in IEEE since 2015
2. Annual membership Computer Society of India since 2015
3. Member of the EC Council since 2016