

Ronak Duggar

Technical Trainer — Full Stack Developer — AI/ML Researcher

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Summary

A dynamic Technical Trainer, Full Stack Developer, and Research Contributor with strong expertise in Artificial Intelligence, Machine Learning, Geospatial Analysis, and modern Web Technologies. Currently serving as Technical Trainer at Geeta University, actively leading academic initiatives as **IEEE Cell Coordinator, Innovation Cell Coordinator, and Smart India Hackathon SPOC**, while contributing to curriculum design, academic coordination, and student mentorship.

Possesses hands-on experience in developing scalable web applications using MERN Stack and Next.js, along with practical exposure to IoT systems, mobile application development, and real-time data-driven solutions. Demonstrates a strong research profile with **8 publications and 128+ citations (Scopus H-Index: 6)**, spanning **IEEE** and **Scopus-indexed publications**, book chapters with international publishers (**Wiley, IGI Global, De Gruyter**), and **10 published Indian patents** in emerging technology domains.

Actively engaged in bridging academia and industry through training programs, workshops, and project-based learning, with a keen interest in building innovative solutions in AI, cybersecurity, and geospatial intelligence.

Core Competencies

- Full Stack Development (MERN Stack, MEAN Stack, Next.js, TypeScript)
- Machine Learning (Python, Scikit-learn, Data Analysis)
- Geospatial Analysis (Google Earth Engine, QGIS, Remote Sensing)
- IoT & Embedded Systems (Arduino, NodeMCU, Sensor Integration)
- Technical Training & Curriculum Development
- Stock & Forex Trading (Technical Analysis)

Weblinks

- **Scopus:** 58629689000 (**H-Index: 6**)
- **ORCID:** 0009-0005-0103-6288
- **GitHub:** ronakduggar
- **ResearchGate:** hdr-xprf
- **Google Scholar:** fpXVcdcAAAAJ
- **Portfolio:** ronakduggar.com

Professional Experience

Technical Trainer *Geeta University*

Haryana, India *Feb 2024 – Present*

- Serving as **IEEE Cell Coordinator** and **Innovation Cell Coordinator**, leading technical and innovation-driven initiatives across the institution.
- Delivered **hands-on training in Full Stack Development**, enabling students to build real-world applications.

- Worked as **SPOC for Smart India Hackathon (SIH) 2025**, mentoring student teams and coordinating institutional participation; recognised by the Ministry of Education & AICTE for this contribution.
- Served as a **Jury Member** for the Internal Hackathon of Smart India Hackathon (SIH) 2024, evaluating prototype solutions.
- Acted as **Exam Coordinator** for MST and End-Term Examinations, ensuring smooth execution and compliance with academic standards.
- Contributed as **IQAC Coordinator**, supporting quality assurance and accreditation processes.
- Actively involved in **Admissions and Student Counselling**, guiding students in academic and career decisions.
- Worked as **Curriculum Incharge**, designing and updating course structures based on industry trends.
- Developed training modules and conducted workshops aligned with emerging technologies, including a Faculty Development Program on **AI & Agentic AI** (Geeta University & Geeta Technical Hub, June 2026).

Full Stack Developer
AVN Innovations Pvt. Ltd.

Ajmer, India
Jan 2023 – Jan 2024

- Developed scalable web applications using ReactJS and MongoDB.
- Collaborated with cross-functional teams to build efficient solutions.
- Optimised application performance and improved UI/UX.

Freelance Web Developer
Flexxited

Bengaluru, India
May 2021 – Jan 2023

- Delivered custom-built websites tailored to client requirements.
- Ensured responsive design and user-friendly interfaces.
- Maintained and optimized existing web applications.

Stock & Forex Trader
Self-Employed

Mar 2019 – Present

- Developed and implemented trading strategies based on technical analysis.
- Conducted market research and analyzed global trends.
- Managed diversified portfolio and risk strategies.

Education

Masters in Computer Application <i>Maharshi Dayanand Saraswati University</i> 2019-08 – 2022-06	Ajmer, India
Bachelors in Computer Applications <i>Maharshi Dayanand Saraswati University</i> 2016-07 – 2019-08	Ajmer, India

Publications

Crucial Role of Blockchain in Quantum Computing: Enhancing Security and Trust

2024

Book Chapter (International Publisher – De Gruyter)

Duggar, R. and N. E. ElSayed, “5 Crucial Role of Blockchain in Quantum Computing: Enhancing Security and Trust,” in *Quantum Machine Learning: Quantum Algorithms and Neural Networks*, edited by P. Raj, H. H. Song, D.-N. Le, and N. Vyas, Berlin, Boston: De Gruyter, 2024, pp. 79–102. doi: <https://doi.org/10.1515/9783111342276-005>

- Advanced Real-Time Simulation Framework for the Physical Interaction Dynamics of Production Lines Leveraging Digital Twin Paradigms** 2024-05
Wiley Online Library (Book Chapter)
 Bhati, N., Vyas, N., Dutt, V., **Duggar, R.**, & Pokhriyal, A. (2024). Advanced Real-Time Simulation Framework for the Physical Interaction Dynamics of Production Lines Leveraging Digital Twin Paradigms. In *Simulation Techniques of Digital Twin in Real-Time Applications* (pp. 319–343). Wiley. doi: <https://doi.org/10.1002/9781394257003.ch15>
- Exploring Few-Shot Learning Approaches for Bioinformatics Advancements** 2024-04
IGI Global (Book Chapter)
 N. Bhati, **R. Duggar**, and A. Alzahrani, “Exploring Few-Shot Learning Approaches for Bioinformatics Advancements,” *Applying Machine Learning Techniques to Bioinformatics*, IGI Global, pp. 303–316, Apr. 2024. doi: <https://doi.org/10.4018/979-8-3693-1822-5.ch016>
- Empowering Safety by Embracing IoT for Leak Detection Excellence** 2023-11
IGI Global (Book Chapter)
 N. Bhati, **R. Duggar**, and A. Saber, “Empowering Safety by Embracing IoT for Leak Detection Excellence,” *Innovations in Machine Learning and IoT for Water Management*, IGI Global, pp. 231–251, Nov. 2023. doi: <https://doi.org/10.4018/979-8-3693-1194-3.ch012>
- A Machine Learning Framework for Accurate Prediction of Parkinson’s Disease from Speech Data** 2023-09
IEEE Conference Paper (Scopus Indexed)
 S. R. Burri, D. K. Agarwal, N. Vyas, and **R. Duggar**, “A Machine Learning Framework for Accurate Prediction of Parkinson’s Disease from Speech Data,” *Proc. 2023 3rd International Conference on Innovative Sustainable Computational Technologies (CISCT)*, Dehradun, India, 2023, pp. 1–6. doi: <https://doi.org/10.1109/CISCT57197.2023.10351422>
- Exploring the Potential of Deep Reinforcement Learning for Autonomous Navigation in Complex Environments** 2023-08
IEEE Conference Paper (Scopus Indexed)
 V. R. Burugadda, N. Jadhav, N. Vyas and **R. Duggar**, “Exploring the Potential of Deep Reinforcement Learning for Autonomous Navigation in Complex Environments,” *Proc. 2023 7th International Conference on Computing, Communication, Control and Automation (ICCUBEA)*, Pune, India, 2023, pp. 1–6. doi: <https://doi.org/10.1109/ICCUBEA58933.2023.10392109>
- Optimizing Irrigation Efficiency with IoT and Machine Learning: A Transfer Learning Approach for Accurate Soil Moisture Prediction** 2023-07
IEEE Conference Paper (Scopus Indexed)
 S. R. Burri, D. K. Agarwal, N. Vyas, and **R. Duggar**, “Optimizing Irrigation Efficiency with IoT and Machine Learning: A Transfer Learning Approach for Accurate Soil Moisture Prediction,” *Proc. 2023 World Conference on Communication & Computing (WCONF)*, Raipur, India, 2023, pp. 1–6. doi: <https://doi.org/10.1109/WCONF58270.2023.10235220>
- Intelligent Healthcare: Using NLP and ML to Power Chatbots for Improved Assistance** 2023-06
IEEE Conference Paper (Scopus Indexed)

R. Punugoti, **R. Duggar**, R. R. Dhargalkar and N. Bhati, "Intelligent Healthcare: Using NLP and ML to Power Chatbots for Improved Assistance," *Proc. 2023 International Conference on IoT, Communication and Automation Technology (ICICAT)*, Gorakhpur, India, 2023, pp. 1–6. doi: <https://doi.org/10.1109/ICICAT57735.2023.10263708>

Cybersecurity and Data Integrity in Neiti's Oil and Gas Revenue Disclosure Systems in Nigeria 2026-04

International Journal of Contemporary Research in Multidisciplinary (IJCRM), Vol. 5, Issue 2, pp. 829–835

Duggar, R. Analyzes the cybersecurity posture and data integrity mechanisms of the NEITI revenue disclosure platform, proposing a cryptography-backed ledger framework for auditability. doi: <https://doi.org/10.5281/zenodo.19762061>

Design and Simulation of a Secure and Redundant Enterprise Network Architecture Using Cisco Packet Tracer 2026-04

International Journal of Contemporary Research in Multidisciplinary (IJCRM), Vol. 5, Issue 2, pp. 816–821

Duggar, R. Presents a secure, redundant enterprise network design using VLAN segmentation, firewalls, and HSRP/EtherChannel for high availability. doi: <https://doi.org/10.5281/zenodo.19728918>

Patents

Intelligent Digital Twin Platform for Real-Time Silage Storage Simulation and Nutrient Degradation 2026

Indian Patent (Published)

Mr. Nijammudin, **Duggar, R.**, Application No: 202611062365, Published: May 2026, India.

System for Controlled Cultivation and Blockchain-Based Traceability of Cordyceps Sinensis 2026

Indian Patent (Published)

Dr. Yuvraj Yadav, **Duggar, R.**, Application No: 202611065227, Published: May 2026, India.

Automated Sensor-Driven Smart Mirror Cleaning and Anti-Fog Maintenance System 2026

Indian Patent (Published)

Duggar, R., A. Vashist, S. Sonal, V. Rastogi, S. K. Shivandu, Application No: 202611062367, Published: May 2026, India.

AI-Enhanced Multi-Sensor Wearable Watch for Real-Time Emotion Recognition and Personalized User Feed 2026

Indian Patent (Published)

Duggar, R., A. Vashist, S. Sonal, V. Rastogi, S. K. Shivandu, Application No: 202611062516, Published: May 2026, India.

AI-Based Seed Quality Monitoring System: Automated Analysis of Germination Percentage, Physical Purity, and Seed Health 2026

Indian Patent (Published)

Dr. Yuvraj Yadav, **Duggar, R.**, Application No: 202611011149, Published: Mar 2026, India.

Temperature-Adjustable Laptop Skin: Smart Polymer Nanocomposite-Based Adaptive Thermal Control Layer <i>Indian Patent (Published)</i> Duggar, R. , A. Vashist, S. Sonal, V. Rastogi, and S. K. Shivandu, Application No: 202611011145, Filed: 03 Feb 2026, Published: 20 Mar 2026, India.	2026
Modular Furniture System <i>Indian Patent (Published)</i> Duggar, R. , A. Vashist, S. Sonal, V. Rastogi, and S. K. Shivandu, Application No: 202511100534, Filed: 17 Oct 2025, Published: 05 Dec 2025, India.	2025
Universal Digital Key Ring <i>Indian Patent (Published)</i> Duggar, R. , A. Vashist, S. Sonal, V. Rastogi, and S. K. Shivandu, Application No: 202511100535, Filed: 17 Oct 2025, Published: 05 Dec 2025, India.	2025
Inhaler with AI-Based Real-Time Feedback and Respiratory Condition Prediction System <i>Indian Patent (Published)</i> Duggar, R. , A. Vashist, S. Sonal, V. Rastogi, N. Arora, S. Sharma, and S. K. Shivandu, Application No: 202511078528, Filed: 19 Aug 2025, Published: 05 Sep 2025, India.	2025
Decentralized Password Management System <i>Indian Patent (Published)</i> Duggar, R. , A. Vashist, S. Sonal, V. Rastogi, N. Arora, S. Sharma, and S. K. Shivandu, Application No: 202511078530, Filed: 19 Aug 2025, Published: 05 Sep 2025, India.	2025

Awards & Honours

- Completed the **Faculty Development Program on AI & Agentic AI** organized by Geeta University & Geeta Technical Hub, in June 2026.
- Served as a **Session Chair** at the 3rd International Conference on Computational Science & Management (ICCSM-2025), held at Geeta University, Panipat, in April 2025.
- Served as a **Session Chair** at the 1st International Conference on Smart Technologies and Intelligent Computing (**INCSTIC-2025**), organized by Geeta University in collaboration with CRC Press, Taylor & Francis Group, in October 2025.
- Recognised by the **Ministry of Education & AICTE** for exceptional contribution as College SPOC in Smart India Hackathon (SIH) 2025, in December 2025.
- Served as a **Jury Member** for the Internal Hackathon of Smart India Hackathon (SIH) 2024, in September 2024.
- Presented a Research Paper titled “Dual-path Networks with Generative Adversarial Refinement for Synthetic Data Augmentation in Sparse Datasets” at the International Conference on Wireless Sensor Networks, Ubiquitous Computing and Applications (**ICWSNUCA-2026**), organized by Gokaraju Lailavathi Engineering College, Hyderabad, in February 2026.
- Participated in an **International Faculty Development Program** on “Emerging Research and Innovations in AI Applications in Mathematics, Bio-Sciences, and Management” organized by NIMS University, Jaipur, from June 26 to July 2, 2025.

- Successfully completed **UGC-FDP on NEP-2020: Orientation & Sensitization** under Malaviya Mission Teacher Training Programme (MM-TTP), organized by JNV University, Jodhpur, from January 30 to February 7, 2026, with Grade A+.
- Completed a **One-week Faculty Development Program** on “Intelligent Digital Security – The Next Generation of Cyber Security” conducted by Vivekananda Global University (VGU), Jaipur, in November 2025.
- Completed a **Faculty Development Program** on advanced computing frameworks and academic leadership pedagogy, organized by Chitkara University, in November 2025.
- Completed the “**What Is Generative AI?**” certification through LinkedIn Learning, covering generative models, prompt engineering, and ethical AI applications, in July 2025.
- Completed **Research, GDPR and Confidentiality** regulatory training administered by the UKRI Medical Research Council, in December 2024.
- Participated in the Expert Session “Unlocking Opportunities: Navigating Angel Investment and Venture Capital Funding for Startups” at Idea Lab, Geeta University, in July 2024.
- Participated in a **Faculty Development Program on Generative AI**, conducted by Imarticus Learning in June 2024.
- Presented research work at **IEEE International Conference on Innovative Sustainable Computational Technologies (CISCT-2023)**, Dehradun, India.
- Presented research work at **IEEE World Conference on Communication & Computing (WCONF-2023)**, Raipur, India.
- Completed an online certification on **WordPress Web Development** through Coursera, focusing on website design and deployment.
- Completed an online course on **Technical Analysis for Stock and Forex Trading**, covering chart patterns, indicators, and trading strategies.
- Completed an online course on **Blockchain Technology**, gaining knowledge of decentralized systems and smart contracts.
- Attended an academic seminar organized by Maharshi Dayanand Saraswati University on emerging trends in computer science and research.

Projects

Satellite Image Classification using Google Earth Engine

Tools: Google Earth Engine, Sentinel-2, QGIS, Random Forest

- Performed supervised land-use and land-cover classification using Sentinel-2 satellite imagery.
- Utilized FAO GAUL dataset to define the region of interest (Panipat).
- Implemented Random Forest classifier and improved accuracy through preprocessing and tuning.
- Addressed challenges such as cloud masking and tile rendering errors.

Multiple Portfolio Website Development Platform

Tech Stack: MERN Stack (MongoDB, Express.js, ReactJS, Node.js), Next.js, HTML, CSS, JavaScript, Firebase

- Designed and developed multiple portfolio websites for students and professionals to showcase their skills, projects, and achievements.
- Implemented dynamic and responsive UI components to ensure compatibility across devices and screen sizes.
- Utilized Next.js for optimized performance, server-side rendering, and improved SEO.

- Integrated Firebase for hosting and real-time data management.
- Customized portfolio templates based on individual user requirements and domain-specific needs.
- Provided deployment support and guidance for publishing portfolios on live servers.

Self-Balancing Robot

Tools: Arduino, NodeMCU, Gyroscope Sensor, WiFi Module

- Developed a self-balancing robot using Arduino and NodeMCU integrated with gyroscope sensors.
- Implemented real-time stabilization mechanism using sensor data and control algorithms.
- Enabled wireless communication through WiFi module for monitoring and control.

TaskFlow – Collaborative Kanban Board

Tech Stack: React.js, Node.js, Express, MongoDB, React DnD

- Built a collaborative task manager with an interactive drag-and-drop Kanban board interface.
- Enabled workspace teams to assign deadlines, track progress lists, and invite collaborators.

DevSpace – Developer Social Network

Tech Stack: MERN Stack, JWT Auth, Redux Toolkit, REST API

- Constructed a MERN stack community platform for software engineers with personalized tech portfolios.
- Implemented coding snippet sharing boards, upvoteable Q&A, and real-time JWT authenticated sessions.

ShopEasy – E-Commerce Platform

Tech Stack: Next.js, MongoDB, Tailwind CSS, Stripe (Mockup)

- Designed a fully responsive online storefront with product search, category filtering, and a persistent checkout cart.
- Built a merchant dashboard to track order inventory alongside mockup payment handling.

LinkCraft – Personalized Bio-Link Builder

Tech Stack: React, Node.js, Express, MongoDB, Recharts

- Developed a Linktree-like custom bio page creator with customizable color schemes and dynamic links.
- Implemented simple analytics charting to track link click counts.

UFit Trainer Application

Tech Stack: Flutter, Firebase

- Contributed to the development of a fitness trainer application designed to track user activities and provide personalized diet plans.
- Assisted in implementing features related to activity monitoring and user data management.
- Collaborated with the development team to enhance application functionality and user experience.

Jamestry Job Portal Application

Tech Stack: Flutter, Firebase

- Contributed to the development of a job portal application using Flutter with Firebase as the backend.
- Assisted in backend integration and data handling using Firebase services.
- Supported deployment process of the application on Google Play Store and Apple App Store.

Skills

- **Programming Languages:** Python, JavaScript, TypeScript, Dart, C, C++
- **Geospatial Analysis:** Google Earth Engine, QGIS, ERDAS Imagine, ENVI, Remote Sensing, Satellite Image Processing

- **Artificial Intelligence & Machine Learning:** Python, Scikit-learn, NLP, Deep Learning Basics, Data Analysis, Model Evaluation
- **Web Development:** MERN Stack (MongoDB, Express.js, ReactJS, Node.js), Next.js, TypeScript, REST APIs, Bootstrap, Tailwind CSS, Responsive Design
- **Mobile App Development:** Flutter, Dart, Firebase, GetX, Cloud Functions
- **IoT & Embedded Systems:** Arduino, NodeMCU, Sensors Integration, WiFi, BLE, IoT System Design
- **Database & Tools:** MongoDB, MySQL, Firebase, Git/GitHub, Postman
- **Technical Training & Academics:** Curriculum Design, Student Mentoring, Workshop Facilitation, Academic Coordination

Languages

• **Hindi** [Native]

• **English** [Fluent]

• **Punjabi** [Basic]