

Aditya Vardhan

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Summary

I am a dedicated academic professional with expertise in the Internet of Things, Drone Technology, and Machine Learning, passionate about imparting industry-relevant skills to students. I have a strong academic footprint, with publications in esteemed Scopus-indexed journals and conferences, alongside a Granted International Design Patent in the UK. As a keynote speaker and resource person, I have conducted impactful workshops and Bootcamp across India. My research spans advanced fields such as IoT, Drone Technology, Machine Learning, Remote Sensing, Computer Vision, and Generative AI.

Area of Expertise

Internet of Things | Flight Controller Programming | AWS | Data Analyst | Machine Learning | Prompt Eng.

Education

Dayalbagh Educational Institute, Ph.D. in Computer Science Pursuing (March 2025)

- Topic: Swarm Intelligence, Drone, IoT
- **Coursework:** Scientific Computing, Research Methodology, Research and Publication Ethics

Dayalbagh Educational Institute, M.Sc in Computer Science July 2023 – Dec 2024

- CGPA: 7.33/10.0
- **Coursework:** Computer Architecture, Comparison of Learning Algorithms, Computational Theory

Dayalbagh Educational Institute, B.Voc in Internet of Things Sept 2020 – May 2023

- CGPA: 8.63/10.0
- **Coursework:** Computer Embedded Programming, Computer Vision, Flight Controller Programming, Drone Assesmbly and Piloting

Experience

Data Analysis and Web Developer, MHRD Project – DEI, Agra Oct 2022 – March 2026

- Leveraged data analysis and web development skills to support projects funded by the Ministry of Human Resource Development (MHRD).
- Analyzed scientific data to extract insights and facilitate evidence-based decision-making in a laboratory setting.
- Developed and maintained web applications to streamline research processes and enhance collaboration within the scientific community.

DEI Summer Research Fellowship, DEI, Agra April 2023 – July 2023

- Engaged in intensive research at the DEI Summer Fellowship program, delving deep into the realms of Machine Learning under expert guidance.
- Explored advanced concepts and methodologies in Machine Learning, contributing to the development of cutting-edge solutions and pushing the boundaries of innovation.
- Gained invaluable hands-on experience in applying Machine Learning techniques to real-world problems, honing skills in data analysis, model development, and performance evaluation.

Machine Learning Intern, IoTian Hub pvt. ltd, Agra June 2023 – Aug 2023

- Spearheaded ML initiatives at Iotianhub, implementing cutting-edge algorithms to optimize IoT systems and enhance predictive analytics capabilities.

- Integrated machine learning models seamlessly into IoT architectures, enabling real-time data analysis and actionable insights for IoT applications.
- Engineered innovative ML solutions to address complex challenges in IoT deployments, driving efficiency, reliability, and scalability across interconnected devices.

Publications

- A Study on Creation of Industry 5.0: New Innovations using big data through artificial intelligence, Internet of Things and next-origination technology policy** Jan 2023
M Yadav, **A. Vardhan**, AS Chauhan, S Saini, 2023 IEEE International Students' Conference on Electrical, Electronics and Computer Science (SCEECS), Bhopal, India, 2023, pp. 1-12, 10.1109/SCEECS57921.2023.10063069
- Appraisal Study and analytics of Industrial 4.0-A rebellion towards existing twins** Jan 2024
M. Yadav, V. Shrivastav, **A. Vardhan**, A. S. Chauhan and S. Saini, "Appraisal Study and analytics of Industrial 4.0 - A rebellion towards existing twins," 2024 IEEE International Students' Conference on Electrical, Electronics and Computer Science (SCEECS), Bhopal, India, 2024, pp. 1-11, 10.1109/SCEECS61402.2024.10481861
- A Hybrid Metaheuristic Framework for Multi-Objective Ethical Decision-Making in Digital Governance** July 2026
Vardhan, A., Yadav, M., Chauhan, A. S., Raghaw, V. & Saini, S. (2026). A Hybrid Metaheuristic Framework for Multi-Objective Ethical Decision-Making in Digital Governance. International Journal of Creative and Open Research in Engineering and Management, <i>02</i>(7), 1-9. 10.55041/ijcope.v2i7.231
- Baaljyoti -Shiksha ke Nanhe Kadam An android based E-learning for primary kids in India** Jan 2023
M. Yadav,**A. Vardhan**, M. Gupta, "Baaljyoti -Shiksha ke Nanhe Kadam An android based E-learning for primary kids in India," 2023 YMER, India, pp. 1228-1237, 10.37896/YMER22.01/90
- IoT Based Smart Electricity Meter with Energy Prediction and Consumption** Jan 2022
A. S. Chauhan, M. Yadav, **A. Vardhan**, S. Saini, "IoT Based Smart Electricity Meter with Energy Prediction and Consumption," 2022 Journal of emerging Technologies and Innovation Research, 2022 JETIR January 2022, Volume 9, Issue 1.
- IoT Based Health Monitoring System** Jan 2022
Mohit Yadav, **Aditya Vardhan**, Amarjeet Singh Chauhan, Dr. Sanjay Saini, "IoT Based Health Monitoring System", International Journal of Creative Research Thoughts (IJCRT), ISSN:2320-2882, Volume.10, Issue 1, pp.c708-c715, January 2022, Available at :<http://www.ijcrt.org/papers/IJCRT2201306.pdf>.
- IoT Based Smart Residence System** Jan 2022
Aditya Vardhan, Mohit Yadav, Amarjeet Singh Chauhan, Dr. Sanjay Saini, "IoT Based Smart Residence System", International Journal of Creative Research Thoughts (IJCRT), ISSN:2320-2882, Volume.10, Issue 1, pp.c694-c702, January 2022, Available at :<http://www.ijcrt.org/papers/IJCRT2201304.pdf>

Patents

Quantitative Plant Chlorophyll Imaging Device

Application No: 486736-001, A.S. Chauhan, M. Yadav, **A. Vardhan**, S. Saini, Registration Date: 09/01/2026, Status: **Granted**, INDIA.

Optimized hybrid unmanned aerial system utilizing ionic propulsion technology Along with toroidal propellers

Application No: 202411018436, G.P. Kalra, A.S. Chauhan, M. Yadav, **A. Vardhan**, Status: **Filed**, INDIA.

High Speed VTOL Remote Controlled Drone

Application No: 400661-001 A.S. Chauhan, M. Yadav, **A. Vardhan**, S. Saini, S. Roy Status: **Granted**, INDIA.

Milk Adulteration Detection Device

Application No: 472658-001 A. Kushwah, V. Verma, R. Rajput, P. Pakalapati, A.S. Chauhan, M. Yadav **A. Vardhan**, A. Sharma, D. Agarwal, B. Kumari Status: **Granted**, INDIA.

Printed Circuit Board

Application No: 6328234 International Design Classification:Version: 14-2023Class: 13 EQUIPMENT FOR PRODUCTION, DISTRIBUTION ORTRANSFORMATION OF ELECTRICITYSubclass: 03 EQUIPMENT FOR DISTRIBUTION OR CONTROL OF ELECTRICPOWER A.S. Chauhan, M. Yadav, **A. Vardhan**, S. Saini, S. Roy Status: **Granted** Date: 08 April 2024, UK.

Device for the monitoring and distribution of nutrients for Hydroponics

Application No: 6326599 International Design Classification n:Version: 14-2023Class: 10 CLOCKS AND WATCHES AND OTHER MEASURINGINSTRUMENTS, CHECKING AND SIGNALLING INSTRUMENTSSubclass: 05 INSTRUMENTS, APPARATUS AND DEVICES FOR CHECKING,SECURITY OR TESTING A.S. Chauhan, M. Yadav, **A. Vardhan**, S. Saini, S. Roy Status: **Granted** Date: 07 December 2023, UK.

Medi-Drone : Medicine Delivery drone

Application No: 6317960 International Design Classification: Version: 14-2023 Class: 12 MEANS OF TRANSPORT OR HOISTING Subclass: 07 AIRCRAFT AND SPACE VEHICLES **A. Vardhan**, A.S. Chauhan, M. Yadav , S. Saini, S. Roy Status: **Granted** Date: 16 October 2023, UK.

Remote controlled Helicopter drone

Application No: 6309933 International Design Classification: Version: 14-2023 Class: 12 MEANS OF TRANSPORT OR HOISTING Subclass: 07 AIRCRAFT AND SPACE VEHICLES **A. Vardhan**, A.S. Chauhan, M. Yadav , S. Saini, S. Roy Status: **Granted** Date: 11 October 2023, UK.

Highpayload 16 Rotors Aerial System

Application No: 6304506 International Design Classification: Version: 14-2023 Class: 12 MEANS OF TRANSPORT OR HOISTING Subclass: 07 AIRCRAFT AND SPACE VEHICLES **A. Vardhan**, A.S. Chauhan, M. Yadav , S. Saini, S. Roy Status: **Granted** Date: 28 September 2023, UK.

32 Rotor High Payload Drone

Application No: 6312678 International Design Classification: Version: 14-2023 Class: 12 MEANS OF TRANSPORT OR HOISTING Subclass: 07 AIRCRAFT AND SPACE VEHICLES **A. Vardhan**, A.S. Chauhan, M. Yadav , S. Saini, S. Roy Status: **Granted** Date: 09 October 2023, UK.

Light Weight Drone

Application No: 6299404 International Design Classification: Version: 14-2023 Class: 12 MEANS OF TRANSPORT OR HOISTING Subclass: 07 AIRCRAFT AND SPACE VEHICLES **A. Vardhan**, A.S. Chauhan, M. Yadav , S. Saini, S. Roy Status: **Granted** Date: 05 August 2023, UK.

Book Chapters

Innovations in Machine Learning for Energy Efficiency: Bridging Predictive Analytics and Real-World Applications

A. Vardhan, A.S. Chauhan, M. Yadav, S. Saini, S. Sharma, “Innovations in Machine Learning for Energy Efficiency: Bridging Predictive Analytics and Real-World Applications” Secure Energy Optimization: Leveraging Internet of Things and Artificial Intelligence for Enhanced Efficiency, Wiley–Scrivener Publishing LLC, 2025. DOI: 10.1002/9781394271849.ch3.

Predictive Analytics as a Pathway to Intelligent Demand Response and Load Management

A. Vardhan, A.S. Chauhan, S. Sharma, "Predictive Analytics as a Pathway to Intelligent Demand Response and Load Management" *Secure Energy Optimization: Leveraging Internet of Things and Artificial Intelligence for Enhanced Efficiency*, Wiley–Scrivener Publishing LLC, 2025. DOI: 10.1002/9781394271849.ch14.

Computational Techniques in RADAR Remote Sensing from a Machine and Deep Learning Perspective

A. Vardhan, A.S. Chauhan, S. Saini, A. Jhingran, "Computational Techniques in RADAR Remote Sensing from a Machine and Deep Learning Perspective" *RADAR Remote Sensing Data Analysis with Artificial Intelligence*, De Gruyter, 2025. DOI: 10.1515/9783111572970-012.

Advancing Solar Energy with Machine Learning, Perovskite Technology, and Smart Data Systems

A. Vardhan, A.S. Chauhan, S. Saini, S. Sharma, "Advancing Solar Energy with Machine Learning, Perovskite Technology, and Smart Data Systems" *Perovskite Solar Cells*, CRC Press / Taylor & Francis, 2025. DOI: 10.1201/9781003589747-9.

IoT-Driven Climate Smart Agriculture: Adapting to a Changing Climate for Sustainable Farming

A. Vardhan, A.S. Chauhan, S. Saini, S. Sharma, "IoT-Driven Climate Smart Agriculture: Adapting to a Changing Climate for Sustainable Farming" *AI-Driven IoT Solutions in Agriculture: New Insights*, Studies in Computational Intelligence, Vol. 1236, Springer, Cham, 2026. DOI: 10.1007/978-3-032-05603-0_5.

Connecting IoT for Precision Farming: Driving Efficiency and Sustainability in Agriculture

A. Vardhan, S. Sharma, "Connecting IoT for Precision Farming: Driving Efficiency and Sustainability in Agriculture" *AI-Driven IoT Solutions in Agriculture: New Insights*, Studies in Computational Intelligence, Vol. 1236, Springer, Cham, 2026. DOI: 10.1007/978-3-032-05603-0_3.

Machine Learning for Improving Educational Outcomes in Primary and Secondary Schools

A. Vardhan, S. Saini, S. Sharma, A. Jhingran, "Machine Learning for Improving Educational Outcomes in Primary and Secondary Schools" *Transforming Outcome-Based Education with Machine Learning*, Page no. 181-197, Springer, Singapore, 2026. DOI: 10.1007/978-981-95-4925-2_8.

Machine Learning Approaches for Microbiome Analysis and Applications

A. Vardhan, Amarjeet Singh Chauhan, S. Saini, S. Sharma, "Machine Learning Approaches for Microbiome Analysis and Applications" *Elevating Next Generation Genomic Science and Technology using Machine Learning in the Healthcare Industry*, Page no. 61-75, Bentham Science, Singapore, 2026. DOI: 10.2174/9798898815493126040006.

Machine Learning Model for Annotation and Assembly of Genomes

A. Vardhan, Amarjeet Singh Chauhan, S. Saini, S. Sharma, "Machine Learning Model for Annotation and Assembly of Genomes" *Elevating Next Generation Genomic Science and Technology using Machine Learning in the Healthcare Industry*, Page no. 61-75, Bentham Science, Singapore, 2026. DOI: 10.2174/9798898815493126040007.

Award and Honours

Best Oral Presenttion Award

6th DSC and 47th NSC (September 2024) in the track of "Agriculture, Dairying and Healthcare Systems" with the title of "Healthcare 5.0: A Comparison study of various machine learning algorithm for classification tasks using diabetes dataset."

Best Volunteer Award

Biometric Identification of Neonates Infants and Toddlers using Smartphones (Aug 2022 - Jan 2023) **This collaborative project is between Michigan State University, USA; Dayalbagh Educational Institute, India.** Data collection was organized at the Saran Ashram Hospital, Dayalbagh, Agra, India in August 2022 to January 2023.

Mentor at Drone Bootcamp

Organized and mentored a 1-month (June 2023) Drone Bootcamp (**Assembly- Testing - Piloting**) and IoT Workshop (**30+ Sensor Integration with 4 different Microcontrollers**), focusing on hands-on training and

practical innovation.

Projects

Model Accuracy on Diabetes dataset

- Employed logistic regression on the Diabetes dataset, achieving a predictive accuracy of 78.5 through feature engineering and normalization techniques.).
- Implemented cross-validation to ensure model robustness and mitigate overfitting, enhancing generalization performance.
- Optimized model hyperparameters via grid search, refining the predictive capabilities for accurate diabetes diagnosis.

Sentiment Analysis Web Applications

- Engineered and orchestrated the deployment of a high-availability sentiment analysis web application on AWS EC2, utilizing Python, Flask, and advanced NLP techniques to process and analyze over 10,000 tweets with an 85 accuracy rate.
- Trained Machine learning model with analytical skills achieving 87prediction accuracy. Processed 5000+ tweets, enhancing customer sentiment understanding for targeted marketing.

LoRa based smart polyhouse monitoring systems

- Designed and implemented an IoT-based Smart Agriculture Land Monitoring System leveraging LoRa technology..
- Enabled efficient remote monitoring and management of critical agricultural land conditions.
- Focused on improving precision farming through real-time data collection and low-power, long-range communication.

Parcle Delivery Drone with Pix-hawk Flight Controller intergrated GPS

- Designed and developed a Parcel Delivery Drone using a Pixhawk Flight Controller for efficient and stable flight operations.
- Integrated GPS for precise navigation and accurate parcel delivery to designated locations.
- Engineered for reliable performance in autonomous logistics and delivery systems.

Smart pesticide spraying Drone with tank capacity 10 liters using Pix hawk with 3 GPS

- Designed a Smart Pesticide Spraying Drone equipped with a 10-liter tank for efficient agricultural applications.
- Utilized a Pixhawk Flight Controller integrated with three GPS modules for enhanced navigation accuracy and stability.
- Engineered to ensure precise and uniform pesticide spraying across large fields, optimizing coverage and reducing wastage.

Online Course and Certificates

- Introduction to the Internet of Things and Embedded Systems (Aug 2021) - Coursera
- Crash Course on Python. (Apr 2021)- Coursera
- Python Data Structures (Apr 2021) - Coursera
- Build and Deploy AI Messenger Chatbot using IBM Watson -(Aug 2023) Coursera
- Prompt Engineering for ChatGPT (Oct 2023)- Coursera

Skills

- **IoT Development:** LoRaWAN, ESP32, Arduino, Raspberry Pie
- **Hardware Programing:** Pixhawk, KK-Board, Naza M-Lite, Radio link
- **Language:** Python, Arduino, C and Latex
- **Soft Skills:** Planning, Organized, Creative Problem-Solving, Teamwork, Active Listening, Adaptability, Analytical Thinking

Languages

- **Hindi** [Native]
- **English** [Fluent]