

Aayushi International Interdisciplinary Research Journal (AIIRJ)

Peer Reviewed and Indexed Journal

ISSN 2349-638X

SJIF Impact Factor 8.379

Website: www.aiirjournal.com

Theme of Special Issue

‘Exploring Pillars for Viksit Bharat-2047’

(Special Issue No. 159)

Editors-in-Chief

Principal, Dr. Gurunath Fagare

Dr. Pramod Tandale

Executive Editor

Miss Dipali H. Chavan

No part of this Special Issue shall be copied, reproduced or transmitted in any form or any means, such as Printed material, CD – DVD / Audio / Video Cassettes or Electronic / Mechanical, including photo, copying, recording or by any information storage and retrieval system, at any portal, website etc.; Without prior permission.

Aayushi International Interdisciplinary Research Journal

ISSN 2349-638x

Special Issue No.159

Feb.2026

Disclaimer

Research papers published in this Special Issue are the intellectual contribution done by the authors. Authors are solely responsible for their published work in this special Issue and the Editor of this special Issue are not responsible in any form.

Editorial Board

- 1) Miss Dipali H. Chavan**
- 2) Dr. Shivaji R. Tate**
- 3) Dr. Anand G. Ghorpade**
- 4) Dr. Rajesh S. Gavit**
- 5) Dr. Bhimashankar M. Birajdar**
- 6) Mr. Rajendra S. Jaykar**
- 7) Mr. Sandip A. Patugade**
- 8) Miss Archana S. Kadam**
- 9) Miss Pooja Indalkar**

From the Principal's Desk



It gives me an immense pleasure and pride to publish the proceedings of the National Conference on “*Exploring Pillars for Viksit Bharat 2047.*” This conference has provided a valuable academic platform for academicians, researchers, and information professionals to deliberate on the changing role of different contributors to the development of the nation and achievement of the objectives.

The National Conference on “Exploring Pillars for Viksit Bharat- 2047” is a visionary platform aimed at fostering dialogue, innovation, and collaboration to realize the goal of a Developed India by 2047. The conference brought together policymakers, academicians, industry leaders, entrepreneurs, students, and civil society to deliberate on transformative strategies for inclusive, sustainable, and technology-driven national growth.

This national conference successfully addressed contemporary issues, recent trends, and challenges and role of various sectors in achieving objectives of Viksit Bharat. Through keynote addresses, panel discussions, paper presentations, and interactive sessions, the conference paved way to generate actionable insights and policy-oriented recommendations for nation-building. Let this conference serve as a catalyst for ideas that empower our citizens, strengthen our institutions, and contribute to building a prosperous and self-reliant India.

I extend my sincere appreciation to the Editor, Miss Dipali Chavan for her dedicated efforts in bringing out this conference issue. I also congratulate the organizing committee, reviewers, authors, and all contributors for their academic involvement and commitment towards the success of this conference.

I am confident that this publication will serve as a valuable reference source for researchers, students, and professionals in the field of Commerce and Management and Social Sciences. I wish the journal every success and hope it will inspire further research and innovation in the field and Vision of Viksit Bharat-2047.

Dr. Gurunath Fagare
Principal
Kisan Veer Mahavidyalaya, Wai

From the Editorial Desk



We are pleased to present this special issue of the journal dedicated to the National Conference on “*Exploring Pillars for Viksit Bharat 2047*”, organized by the Department of Commerce and Management, BCA, and Psychology, History, Political Sciences, Economics in association with IQAC. This issue provides a platform for academicians, researchers and information professionals to share their research findings, experiences and innovative practices related to the application for “*Exploring Pillars for Viksit Bharat 2047*”.

This enthusiastic participation of academicians, researchers, and scholars across the nation reflects the collective intellectual commitment towards contributing to the vision of Viksit Bharat 2047 — a developed, self-reliant, and globally competitive India. The research papers submitted cover diverse dimensions such as economic growth, sustainable development, digital transformation, governance, reforms, social empowerment, innovations, and entrepreneurship. Each contribution adds meaningful insight into the structural and strategic pillars required to achieve the national vision of Vikasit Bharat

As Chief Editor, I sincerely appreciate the dedication of all authors, reviewers, members of the organizing committee, and IQAC for maintaining academic rigor and quality throughout the review and publication process. The success of this conference is a testament to our institution’s commitment to fostering research culture, interdisciplinary dialogue and academic excellence.

I sincerely appreciate the valuable contributions made by the authors, whose scholarly papers have enriched the knowledge and added literature through this journal issue. I am also grateful to the reviewers and editorial board members for their critical evaluation and constructive suggestions, which helped maintain the academic quality of the publication. Special thanks are due to the organizing committee and all contributors who worked tirelessly for the successful completion of this conference journal.

My personal gratitude goes to the eminent personality Hon’ble Dr. Deepak Karanjikar, Advisor, Viksit Maharashtra, Government of Maharashtra who had accepted our invitation as Chief Guest of Inaugural Function and Keynote Speaker, shared his views and ideas. Dr. Parashram Patil , Advisor, Viksit Maharashtra, Government of Maharashtra had accepted our invitation as Resource Person and Dr. Major Ashok Giri, Principal A.S.S.M, Medha for sharing their valuable views in Valedictory function.

We owe our sincere thanks to Hon’ble Shri. Madandada Bhosale, President, Janata Shikshan Sanstha, Wai who is the constant source of inspiration and driving force behind the execution of innovative ideas. We are thankful to secretary Hon’ble Dr. Jayawant Chaudhari for his kind support in the venture. I express my gratitude to Hon’ble. Principal Dr. Gurnath Fagare for his constant support. The organizing committee member also contributed a lot for the success of the Conference. The said conference would not have been successful without cooperation and support of the faculty, library staff and administrative staff. I thank all of them for their kind support and cooperation.

I am confident that this issue will serve as a useful source of knowledge and inspiration for professionals, researchers and students. I hope it will encourage further research and innovation, contributing to the continuous development of Viksit Bharat in digital era.

Executive Editor

Miss. Dipali Chavan

Assistant Professor, Department of Commerce and Management
Kisan Veer Mahavidyalaya, Wai

Sr. No.	Name of the Author	Title of Paper	Page No.
Vol. 02 (BCA Papers)			
56.	Miss. Aarti . S .Sakunde	The Cybersecurity Dilemma in Smart Homes and IoT Networks	261
57.	Archana Vikram Chavan	Blockchain and Distributed Ledger Technology: Architecture, Applications and Security Challenges – A Comprehensive Review	265
58.	Prof. Komal Dadasaheb Choudhari	Artificial Intelligence and Data Science	269
59.	Suryawanshi Megha Vishwanath	Edge Computing for Sustainable IoT Systems in Smart Cars	273
60.	Mr. Swapnil B. Khandagale, Dr. Samiksha V. Nikam	Artificial Intelligence and Data Science as Pillars of Viksit Bharat @2047	277
61.	Prof. Ms. Shital Rangrao Sawant	Cyber Security	283
62.	Ms. Nikita Nitin Gaikwad, Ms. Shweta Nitin Gaikwad	Governance, Digital Infrastructure, and Cybersecurity: Pathways to Viksit Bharat @2047	288
63.	Miss.Gaikwad Purnima Vilas	Blockchain and Distributed Ledger Technology	293
64.	Mrs.Kadam Archana Shrikant	Sustainable Development Through Smart Technologies	296
65.	Miss. Shradha S. Chaudhari	Emerging Cyber Security Threats and Defense Mechanisms	299
66.	Miss. Saniya Ashpak Kazi	Cyber Security Challenges and Preventive Measures in Digital Infrastructure	302
67.	Mrs.Sumedha Mandar Taru, Dr. Mandar Dattatray Taru	Startups and Entrepreneurship Development for Viksit Bharat	305
Economics Papers			
68.	Dr. R. S. Gavit	Green Banking in India: Sustainability Implications for the Modern Financial Sector	309
69.	Dr. Prema Arum Yadav	Waste Management through the 3R Principle: A Circular Economy Approach	313

Artificial Intelligence and Data Science

Prof. Komal Dadasaheb Choudhari

Department of BCA

Kisan Veer Mahavidyalaya Wai

khamkar.komal125@gmail.com

Abstract :

Artificial Intelligence (AI) and Data Science are two fields reshaped how organisations and societies process information, make decisions, and innovate. AI uses smart algorithms to learn and make decisions, while Data Science finds insights from large amounts of data. AI builds models that can learn, reason, and adapt, while Data Science uses methods to find insights from huge datasets. Their coming together has built powerful tools for predictive analytics, automation, intelligent and smart systems.

Key techniques like machine learning for predictive modelling, deep learning for complex pattern recognition, natural language processing for text and conversational analysis, and computer vision for automated visual interpretation are examined. They are applied in areas such as healthcare, finance, customer service, marketing, self-driving cars, manufacturing, and cyber security. The review also highlights current research challenges such as scalability, interpretability, and ethical concerns, while outlining future trends including explainable AI, federated learning, and responsible data-driven innovation.

This paper reviews the methodologies, techniques, applications, and challenges of AI in data science and analytics. It highlights the distinctive contributions of ML, DL, NLP, and computer vision, examines their impact across multiple sectors, and discusses current research challenges.

Keywords: Data Science, Deep Learning, Machine Learning, Artificial Intelligence, Data Analytics.

Introduction:

AI (Artificial Intelligence) is the field of computer science that focuses on creating systems capable of performing tasks that normally require human intelligence. These tasks include learning from data, reasoning, problem-solving, understanding language, and recognising patterns. For example Google Maps uses AI to suggest the fastest route by learning from traffic patterns. Chatbots in customer service use AI to understand questions and give helpful answers. AI is basically the “smart brain” inside apps and systems that helps them learn from data and act intelligently.

Data Science is the field that uses methods, tools, and techniques to collect, process, and analyse large amounts of data. Its goal is to find patterns, gain insights, and help make better decisions. For example in healthcare, data science can analyse patient records to predict diseases. IN business, it helps companies understand customer behaviour and improve products.

The integration of AI into data science has not only enhanced analytical capabilities but also expanded the scope of applications across diverse sectors. Together, they make systems smarter and more useful. In healthcare, AI supports diagnostic imaging and personalised treatment plans. In finance, it strengthens fraud detection and risk assessment. In customer service and marketing, it drives personalisation through chatbots and recommendation systems. In manufacturing, it enables predictive maintenance and quality control. In cyber security, it enhances anomaly detection and threat intelligence. Emerging domains such as autonomous vehicles further demonstrate the potential of AI to revolutionize industries by combining perception, reasoning, and real-time decision-making.

Methodology:

This paper is based on a structured review of academic literature, industry reports related to artificial intelligence in data science and analytics. Sources were identified using keywords such as *machine learning, deep learning, natural language processing, computer vision, and data analytics* across major databases and reputable publications. The collected materials were analysed and organised into three points AI and data science methodologies, applications across sectors, and challenges with future trends.

AI and data science Methodologies and Techniques

Artificial Intelligence (AI) brings together many different methods like machine learning, deep learning, natural language processing, and computer vision that form the foundation of modern data science and analytics.

Data Science prepares and analyses data, while AI adds intelligence to make predictions and decisions. Together, they power modern analytics.

- **Machine Learning (ML):** Machine Learning is a branch of Artificial Intelligence that focuses on building algorithms and models that can learn patterns from data and improve their performance over time without being explicitly programmed. Machine Learning teaches computers to learn from data and make smarter decisions.
- **Deep Learning (DL):** Deep Learning is a specialised branch of Machine Learning that uses artificial neural networks with many layers (“deep” networks) to learn complex patterns and representations from large datasets. Deep Learning teaches computers to recognise complex patterns in data, making them powerful for tasks like vision, speech, and language understanding.
- **Natural Language Processing (NLP):** Natural Language Processing (NLP) is a branch of Artificial Intelligence that enables computers to understand, interpret, and generate human language. It bridges the gap between human communication and machine comprehension. NLP helps machines “read, listen, and talk” in human language, making communication between people and technology smoother.
- **Computer Vision (CV):** Computer Vision is a field of Artificial Intelligence that enables machines to interpret and analyse visual information from the world, such as images and videos. It allows systems to “see” and make sense of visual data much like humans do.
- **Data Mining and Statistical Analysis:** Data Mining and Statistical Analysis are core methodologies in Data Science that focus on discovering meaningful patterns, relationships, and trends within large datasets. They provide the foundation for evidence-based decision-making and predictive modelling. Data Mining uncovers hidden patterns, while Statistical Analysis validates and explains them together, they make data science reliable and insightful.
- **Predictive Analytics:** Predictive Analytics is a methodology in Data Science that uses historical data, statistical models, and machine learning techniques to forecast future outcomes. It focuses on identifying patterns and trends to make informed predictions about what is likely to happen.

In following Steps AI connects with Data Science and Analytics:

- **Data Collection & Cleaning :** Raw data is gathered and prepared.
- **Data Science Analysis :** Statistical methods and visualisation help understand trends.
- **AI Methods :** Machine learning, deep learning, NLP, and computer vision add intelligence.
- **Insights and Actions :** Predictions, automation, and smart systems are created.

Here’s a real-world healthcare example showing above steps.

- **Patient Records :** Hospitals collect data like medical history, lab results, and scans.
- **Data Cleaning :** Errors and missing values are fixed to make the data reliable.
- **Data Science Analysis :** Trends are studied, such as which patients are at higher risk.
- **AI Models :** Machine learning and deep learning predict diseases or suggest treatments.
- **Predictions and Better Treatment :** Doctors use these insights to diagnose earlier and personalise care.

Applications of AI and Data Science:

- *Healthcare: In healthcare field Machine learning models predict patient risks and detect diseases early. Computer vision identifies tumours or abnormalities in scans. Predictive analytics tailor therapies to individual patients.*
- *Finance: In finance sector AI systems analyse transaction patterns to flag suspicious Predictive models assess credit risk and market volatility. AI-driven systems optimise investment strategies in real time.*
- *Retail & Marketing: Data mining reveals buying patterns and preferences. AI suggests products (e.g., Amazon, Netflix). Predictive analytics optimise inventory and supply chains.*
- *Transportation & Logistics: Computer vision and deep learning enable self-driving cars. AI-powered systems reduce delivery times and costs. Analytics forecast equipment failures before they occur.*
- *Cyber security: AI identifies unusual network activity to prevent attacks. Data science models spot deviations in system behaviour. AI systems react quickly to mitigate risks.*

- *Education & Libraries: AI personalises educational content for students. Data science supports smart library systems and equitable access. NLP improves search and classification of digital resources.*

Challenges & Ethical Considerations:

- *Data Privacy & Security: Sensitive data (health records, financial transactions, personal identifiers) can be misused if not properly protected. Breaches or unauthorised access erode trust and can cause harm to individuals.*
 - *Algorithmic Bias & Fairness: AI models often inherit biases present in training data, leading to unfair or discriminatory outcomes. Examples include biased hiring algorithms or facial recognition systems that perform poorly across different demographics.*
 - *Transparency & Explain ability: Many AI systems, especially deep learning models, function as “black boxes” with limited interpretability. Lack of transparency makes it difficult for users to understand how decisions are made, raising accountability issues*
- **Accountability & Human Oversight:** When AI systems make errors (e.g., misdiagnosis in healthcare or wrongful flagging in law enforcement), it is unclear who should be held responsible. Human oversight is essential to ensure ethical and lawful decision-making.
 - **Digital Inequality & Access:** Advanced AI tools may widen the gap between organisations with resources and those without. Unequal access to AI-driven insights can reinforce existing social and economic inequalities.
 - **Ethical Frameworks & Regulation:** Current ethical guidelines and regulations are still evolving.

Future Career Opportunities:

The future of careers in AI and data science is changing. Jobs are moving beyond traditional data analysis. They are becoming more advanced and strategic. Many organizations now use large AI systems. Companies like OpenAI and Google DeepMind develop these systems. Because of this, companies need new types of professionals. They need people who can build AI systems. They need people who can deploy and manage them. It is no longer enough to only analyse data. Professionals must understand how intelligent systems work and how to maintain them.

Here are some future career opportunities in AI and Data Science:

- **AI engineers** build and improve machine learning and deep learning models. They work on developing intelligent systems used in apps, automation tools, and business solutions.
- **Data scientists** analyse large amounts of data to find patterns and insights. They help companies make better decisions using predictive models and statistics.
- **ML engineers** design, train, and deploy machine learning models. They focus on making models work efficiently in real-world applications.
- **AI research scientists** develop new algorithms and improve AI technologies. They often work with research organisations like OpenAI and Google DeepMind.
- **MLOps engineers** manage the deployment, monitoring, and maintenance of AI models. They ensure models run smoothly and update them when needed.
- **AI product managers** guide the development of AI-based products. They connect technical teams with business goals and customer needs.
 - **AI Ethics and Governance Specialist** professionals ensure AI systems are fair, transparent, and follow regulations. This role is growing as governments introduce AI laws.
 - **Business Intelligence (BI) Analyst** use data tools to create reports and dashboards. They help organisations understand performance and trends.
- **Robotics engineers** combine AI with hardware to build intelligent machines. They work in areas like automation, manufacturing, and autonomous vehicles.
- **AI entrepreneurs** start businesses using AI technologies. They create innovative products, automation tools, or AI-based services.

Conclusion

In conclusion, Artificial Intelligence and Data Science are growing very fast. Artificial Intelligence and Data Science are changing industries, research, and everyday life very quickly. The integration of advanced machine learning models, big data analytics, and intelligent automation is reshaping how organisations make decisions, optimise operations, and deliver value. As technologies continue to evolve, contributions from leading research institutions and organisations such as OpenAI and Google DeepMind demonstrate the rapid progress and expanding capabilities of AI systems. Artificial Intelligence and Data Science technologies help organizations make better decisions. They improve efficiency and save time. Overall, AI and Data Science will continue to play a central role in scientific advancement, economic growth, and societal development in the years ahead.

References:

1. <https://ijcrt.org/papers/IJCRT2306917.pdf>
2. [Microsoft Word - MUTHA COLLEGE WORD FILE November 2024](#)
3. Mrs. Gayatri Bakhtiani (2025): The Impact of Artificial Intelligence on Data Science: A Comprehensive Approach
4. <https://www.ijcaonline.org/archives/volume187/number21/raj Kumar-2025-ijca-925239.pdf>
5. <https://restpublisher.com/wp-content/uploads/2024/09/5.-Artificial-Intelligence-Methods-for-Data-Science-and-Data-Analytics.pdf>
6. https://www.erpublications.com/uploaded_files/download/prof-prachi-shantanu-admane-prof-pallavi-sachin-patil_vaDMs.pdf
7. https://www.researchgate.net/publication/366238076_Artificial_Intelligence_and_Data_Science

