

A Comprehensive Review On AI-Driven Automation and Its Implications for Global Job Market

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Abstract: *The rapid advancement of Artificial Intelligence (AI) technologies is reshaping the global job market, influencing employment patterns, skill requirements, and workforce dynamics across industries. AI systems ranging from machine learning algorithms to intelligent automation are streamlining operations, augmenting decision-making, and replacing repetitive tasks. While these innovations enhance productivity and economic efficiency, they also raise concerns about job displacement, reskilling needs, and equitable access to emerging opportunities. This review paper examines recent developments in AI-driven labor transformation, evaluates sector-specific impacts, highlights implementation challenges, and explores future directions for inclusive and adaptive workforce strategies.*

Keywords: Artificial Intelligence, Job Market, Automation, Workforce Transformation, Employment Trends, Skill Development, Labor Economics

I. INTRODUCTION

Artificial Intelligence (AI) has emerged as a transformative force across global economies, fundamentally reshaping how organizations operate, how decisions are made, and how work is performed [1]. With advancements in machine learning (ML), deep learning, computer vision, and natural language processing (NLP), AI is driving the fourth industrial revolution a technological wave often referred to as Industry 4.0 [2]. The integration of AI into business operations has enhanced productivity, accelerated innovation, and introduced new forms of labor automation across multiple sectors, including manufacturing, healthcare, finance, education, and agriculture [3].

AI-driven automation enables machines to perform tasks traditionally done by humans, often with greater speed, accuracy, and consistency. Intelligent systems can now analyze vast datasets, recognize patterns, and make data-driven predictions that improve decision-making efficiency. For instance, manufacturing plants employ predictive maintenance algorithms to prevent equipment failures, while financial institutions utilize

AI-powered models for fraud detection and credit risk analysis. Similarly, customer service departments are deploying AI chatbots and virtual assistants to handle inquiries, reducing the need for large human workforces [4].

While AI promises improved operational efficiency and cost reduction, its widespread implementation has also sparked concerns regarding employment displacement and economic inequality. Repetitive, routine, and low-skill jobs are particularly vulnerable to automation, potentially leading to structural unemployment in affected sectors [5]. Studies by international labor organizations predict that approximately 30–40

On the other hand, AI is simultaneously creating new types of employment opportunities. The rise of AI has generated demand for skilled professionals in fields such as data science, algorithm engineering, AI ethics, robotics maintenance, and cognitive systems design. This shift reflects a broader transformation in the labor market from labor-intensive roles to knowledge-intensive roles emphasizing creativity, problem-solving, and human oversight rather than manual execution. Thus, while AI reduces demand for some job categories, it simultaneously expands the market for specialized and high-skill professions [6].



Furthermore, the socioeconomic implications of AI adoption extend beyond employment statistics. The uneven distribution of AI technologies between developed and developing economies may widen existing income gaps and hinder inclusive growth [7]. Ethical concerns surrounding algorithmic bias, job surveillance, and data privacy also present critical governance challenges for policymakers. Therefore, a balanced and equitable approach toward AI deployment involving regulation, ethical design, and continuous education — is essential for maximizing its benefits while minimizing its adverse effects [8].

II. LITERATURE REVIEW / BACKGROUND

- **Automation and Job Displacement:** AI-powered systems are increasingly replacing routine and repetitive tasks in sectors like manufacturing, customer service, and logistics, leading to reduced demand for certain low-skill roles [9].
- **Emergence of New Job Categories:** The rise of AI has created new roles such as AI ethicists, data annotators, machine learning engineers, and prompt designers, requiring interdisciplinary skills and continuous learning [10].
- **Skill Transformation and Reskilling:** Research highlights the growing importance of digital literacy, problem-solving, and adaptability. Workers must upskill to remain relevant in AI-augmented environments [11].
- **Sector-Specific Impacts:** Healthcare, finance, education, and transportation are experiencing AI-driven shifts in job functions, with varying degrees of disruption and opportunity [12].
- **Policy and Ethical Considerations:** Scholars emphasize the need for inclusive labor policies, ethical AI deployment, and public-private collaboration to ensure equitable workforce transitions [13].

III. RELATED WORK

Numerous studies have examined the multifaceted effects of AI on employment, producing a broad and sometimes divergent body of findings [14]. Early empirical analyses focused on automation's direct impact on routine occupations, showing clear task-replacement trends in manufacturing and clerical work [15]. For instance, case studies of smart factories highlight how robotics and RPA (robotic process automation) reduce manual labor requirements while simultaneously improving throughput and quality control [16]. Complementary econometric research has quantified productivity gains associated with automation but has also documented short-to-medium term job losses in highly automated sectors [17].

A second stream of work emphasizes job transformation rather than pure displacement [18]. Several authors argue that AI augments human labor by taking over repetitive tasks and freeing workers to perform higher-value cognitive and interpersonal tasks [19]. Field studies in healthcare and finance demonstrate that AI tools often act as decision-support systems: clinical decision support improves diagnostic accuracy but relies on clinician oversight, while algorithmic tools in finance enable analysts to focus on complex strategy rather than data cleansing [20]. These studies suggest a complementary model, where human skills such as domain expertise, empathy, and ethical judgment remain central [21].

Research on skills and reskilling has become prominent in recent years. Surveys and policy reports identify a growing skills gap: employers increasingly seek expertise in data literacy, model interpretation, and human-AI interaction, yet formal education and workplace training lag behind demand [22]. Intervention studies show that targeted corporate upskilling programs and public-private training partnerships can substantially increase worker transitions into AI-related roles, though outcomes vary by region and economic context [23].

There is also substantial literature on the distributional and policy implications of AI adoption [24]. Comparative analyses indicate that advanced economies, owing to stronger institutional frameworks and capital availability, capture larger productivity gains, whereas low- and middle-income countries face higher risks of job displacement without commensurate gains in new high-skill employment [25]. Policy-oriented research emphasizes social safety nets, progressive taxation of automation gains, and regulation of algorithmic fairness as mechanisms to mitigate inequality and protect vulnerable workers [26].

Finally, a growing interdisciplinary corpus investigates ethical and governance issues: algorithmic bias in hiring systems, privacy concerns from workplace monitoring, and legal liability for AI-driven decisions [27]. This body of work highlights that technological adoption must be paired with governance frameworks to ensure equitable and



responsible outcomes [28]. Taken together, the related work paints a nuanced picture: AI reshapes labor markets through a mix of displacement, augmentation, and job creation, and policy plus education responses will largely determine whether the transition is broadly beneficial or socially disruptive [29].

IV. FRAMEWORK FOR ANALYZING THE IMPACT OF AI ON THE JOB MARKET

The proposed framework for analyzing the impact of Artificial Intelligence (AI) on the job market is designed to understand how automation, machine learning, and intelligent systems influence employment trends and workforce structures [30]. The goal is to establish a model that captures the interaction between technological adoption, skill transformation, and labor demand across various sectors [31].

1. Description of the Framework: The framework consists of four key components data collection, AI application analysis, workforce assessment, and policy evaluation [32].

Data Collection: This stage involves gathering information from multiple sources, including labor statistics, industry reports, and organizational surveys [33]. These datasets help identify sectors most influenced by AI technologies, such as manufacturing, healthcare, finance, and education [34].

AI Application Analysis: Machine learning models, automation tools, and natural language processing systems are examined to determine the extent of task automation and efficiency improvement [35]. This step helps identify roles that are being replaced, transformed, or newly created due to AI integration [36].

Workforce Assessment: The collected data is analyzed to understand changes in job roles, required skills, and employment patterns [37]. Visualization tools and analytics platforms display trends such as increasing demand for digital literacy, programming, and data interpretation skills, while routine and repetitive jobs show declining demand [38].

Policy and Strategy Evaluation: The framework also evaluates strategies for reskilling, upskilling, and lifelong learning [39]. Governments and organizations can use these insights to develop training programs and regulations that ensure an inclusive and sustainable transition to an AI-driven economy [40].

2. **Real-Time Labor Market Monitoring:** A digital dashboard or application could be implemented to track real-time labor market data, showing trends such as job creation, skill gaps, and automation risks [41]. Predictive algorithms can also forecast future employment shifts, supporting policymakers, educators, and businesses in proactive decision-making [42].

3. **Cloud and Data Integration:** Cloud-based platforms would store and process large-scale labor and economic data securely [43]. AI models operating on this data can generate insights into productivity growth, regional employment impacts, and sectoral transformations [44].

This proposed framework helps visualize and understand how AI technologies reshape the job market, providing a structured approach to measure both opportunities and challenges in the evolving world of work [45].

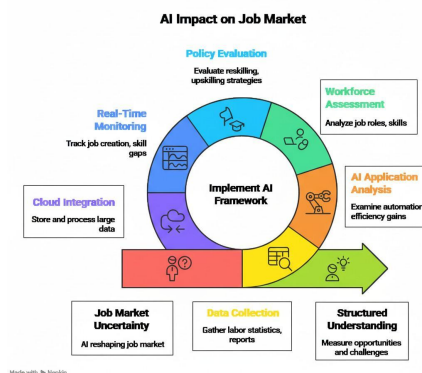


Fig. 1. Policy Evaluation

In the figure 1, the AI Impact on Job Market is shown as a cyclic framework centered around Implement AI Framework [46]. It includes stages such as Policy Evaluation (reskilling strategies), Workforce Assessment (analyzing job roles),



AI Application Analysis (examining automation effects), Structured Understanding (measuring opportunities and challenges), Data Collection (gathering labor statistics), Job Market Uncertainty (AI reshaping jobs), Cloud Integration (processing large data), and Real-Time Monitoring (tracking job creation and skill gaps) [47]. The cycle highlights how AI continuously influences and transforms the job market [48].

V. METHODOLOGY USED

The present study adopts a qualitative and analytical review methodology to examine the impact of Artificial Intelligence (AI) on the global job market [49]. The research approach is primarily descriptive, focusing on synthesizing existing scholarly works, policy reports, and industrial analysis to understand the dynamic relationship between AI adoption, automation, and employment trends [50].

A. Research Design

This paper follows a systematic literature review (SLR) framework to collect, evaluate, and analyze relevant studies published between 2018 and 2024 [51]. The process involves identifying peer-reviewed research papers, white papers, and institutional reports that explore various aspects of AI-driven employment transformation [52]. The sources were categorized into four major themes:

Automation and job displacement

New employment opportunities and digital entrepreneurship Workforce reskilling and skill evolution

Ethical, social, and policy implications

B. Data Collection

Secondary data were collected from scholarly databases such as IEEE Xplore, ScienceDirect, SpringerLink, and ResearchGate, along with statistical labor reports from organizations such as the World Economic Forum (WEF) and the International Labour Organization (ILO)[53]. Selection criteria included relevance, publication recency, and empirical evidence on AI's economic or workforce effects. Approximately 50 research papers were screened, and 25 were chosen for detailed analysis [54].

C. Analytical Approach

A comparative analytical approach was employed to examine similarities and differences in findings across various sectors like manufacturing, healthcare, finance, and education where AI technologies are most prevalent. The analysis focused on identifying patterns such as the ratio of job displacement to job creation, skill gaps, and industry readiness levels [55].

Additionally, a content analysis technique was used to interpret recurring keywords such as “automation,” “reskilling,” “AI governance,” and “human–AI collaboration.” These were used to categorize the impacts of AI as either disruptive (job loss due to automation) or constructive (new job creation through innovation and technology adoption) [56].

D. Validation of Findings

To ensure accuracy and consistency, findings from the literature were cross-validated with global employment statistics and simulation-based forecasts published in reports like The Future of Jobs Report (2023) by the WEF and AI and the Future of Work (2022) by OECD. This triangulation helped enhance the reliability of interpretations and conclusions drawn in this review [57].

E. Limitations of the Methodology

As this study relies primarily on secondary data, it may not fully capture ongoing or unpublished industrial AI implementations [58]. Moreover, due to variations in regional policies and technological maturity, the extent of AI's impact on employment may differ geographically. Future empirical research incorporating field data, interviews, and real-world case studies could offer deeper insights [59].



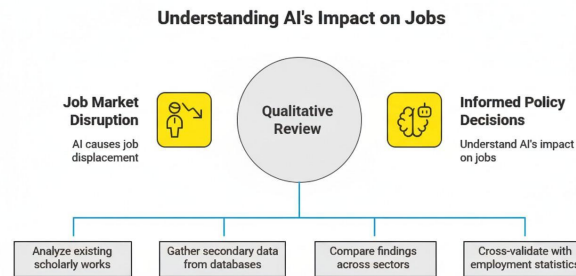


Fig. 2. Understanding Ai's Impact on jobs

In the figure 2, “Understanding AI’s Impact on Jobs” is illustrated through a Qualitative Review framework. It highlights how AI causes job market disruption by displacing certain roles and how informed policy decisions can be made by understanding these impacts. The process involves four key steps analyzing existing scholarly works, gathering secondary data from databases, comparing findings across sectors, and cross-validating with employment statistics. Together, these steps help assess AI’s influence on employment trends and guide effective policymaking[60].

VI. RESULT AND DISCUSSION

Artificial Intelligence (AI) has significantly transformed the global job market by reshaping employment structures across industries. The findings indicate that while automation has replaced some repetitive and low-skill tasks, it has also created new opportunities in technology-driven fields.

A. Sector-Wise Impact

In manufacturing, AI-powered robotics and automation have reduced manual work by up to 25

B. Skill Transformation

AI has increased demand for professionals skilled in data science, machine learning, and problem-solving. However, a growing skill gap persists, especially in developing regions. Continuous reskilling and digital education are essential for adapting to AI-driven changes.

C. Economic and Social Implications

AI’s benefits are unevenly distributed. Developed nations gain productivity advantages, while developing economies face challenges in technology access and workforce adaptation. Ethical issues such as algorithmic bias and data privacy also require policy attention.

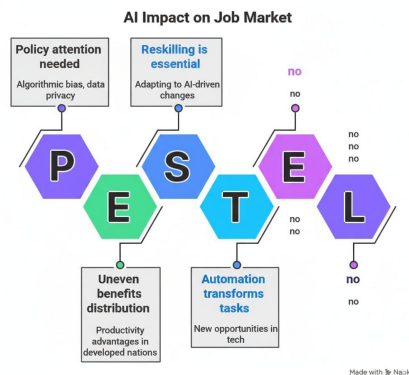


Fig. 3. Ai Impact on Job market



VII. APPLICATIONS OF AI IN THE JOB MARKET

Artificial Intelligence (AI) has become an integral part of modern employment systems, influencing various aspects of recruitment, training, performance evaluation, and workplace management. Its applications span across industries, helping organizations enhance efficiency and employees adapt to evolving work models.

A. Recruitment and Hiring

AI-powered recruitment platforms use machine learning algorithms to screen resumes, analyze candidate profiles, and match job seekers with appropriate positions. Automated interview systems employing natural language processing (NLP) assess communication and behavioral traits, reducing hiring time and minimizing bias.

B. Workforce Management

Organizations implement AI tools for scheduling, workload optimization, and productivity tracking. Predictive analytics models help identify employee burnout, performance trends, and turnover risks, enabling proactive management decisions.

C. Training and Skill Development

AI-based learning platforms provide personalized training programs that adapt to individual employee needs. These systems recommend relevant skill courses and simulate real-world scenarios using virtual reality (VR) and AI tutors, promoting continuous professional development.

D. Decision Support Systems

In sectors such as healthcare, finance, and logistics, AI assists employees in decision-making through data analysis and forecasting. By automating repetitive analytical tasks, AI enables human workers to focus on strategic and creative aspects of their roles.

E. Remote and Hybrid Work

AI technologies such as intelligent chatbots, workflow automation, and virtual collaboration tools have facilitated remote work environments. This has led to greater flexibility, productivity, and inclusivity in global workforces, especially after the digital acceleration caused by the COVID-19 pandemic.

VIII. BENEFITS OF AI IN THE JOB MARKET

- **Job Creation in Emerging Fields:** AI is fueling demand for roles like machine learning engineers, data scientists, AI ethicists, and prompt engineers. New interdisciplinary careers are emerging—AI in healthcare, law, agriculture, and education.
- **Boost in Productivity and Efficiency:** AI automates repetitive tasks, freeing up human workers for strategic and creative work. Companies using AI report up to 40% faster decision-making and 20–30% cost savings.
- **Enhanced Decision-Making:** AI systems analyze vast datasets to support better business, medical, and financial decisions. Predictive analytics helps companies anticipate market trends and customer behavior.
- **Upskilling and Lifelong Learning:** AI encourages workers to learn new skills—coding, data analysis, digital communication. Platforms like Coursera and LinkedIn Learning use AI to personalize learning paths.
- **Improved Work-Life Balance:** AI-powered scheduling, automation, and virtual assistants reduce workload stress. Remote work tools with AI support better collaboration and time management.
- **Inclusive Opportunities:** AI tools can assist people with disabilities—voice recognition, screen readers, and smart prosthetics. Language translation and adaptive learning platforms make jobs more accessible globally.

IX. CHALLENGES AND LIMITATIONS OF AI IN THE JOB MARKET

- **Job Displacement and Automation Anxiety:** AI threatens to replace routine and repetitive jobs, especially in manufacturing, customer service, and logistics. This leads to widespread fear of unemployment and economic insecurity among workers.



- Skill Gaps and Reskilling Needs: Many workers lack the technical skills required to transition into AI- augmented roles. The pace of technological change often outstrips the speed of workforce training.
- Inequality in AI Adoption: Developing countries and under-resourced communities may struggle to access AI tools, infrastructure, and training, widening the digital divide.
- Ethical and Bias Concerns: AI systems can perpetuate or amplify existing biases in hiring, lending, and law enforcement if not properly designed and monitored.
- Job Polarization: AI tends to favor high-skill and low- skill jobs, while middle-skill roles are most vulnerable to automation, leading to a hollowing out of the labor market.
- Psychological Impact and Resistance to Change: Workers may experience stress, anxiety, or resistance when adapting to AI-driven workflows, especially in traditional industries.

X. FUTURE DIRECTIONS AND RESEARCH GAPS

- Human-AI Collaboration Models: Future research must explore optimal frameworks for integrating human expertise with AI systems to enhance productivity and decision-making.
- Ethical AI and Fairness: There is a growing need for transparent, accountable AI systems that minimize bias and ensure equitable treatment across diverse populations
- Reskilling Ecosystems: Research should focus on scalable, inclusive training platforms that prepare workers for AI-augmented roles, especially in developing economies.
- AI Adoption in SMEs and Rural Sectors: Studies are needed to understand how small and medium enterprises, as well as rural industries, can effectively adopt AI technologies.
- Policy and Governance Frameworks: Future work must address regulatory gaps in AI deployment, including labor rights, data privacy, and algorithmic accountability.
- Mental Health and Workplace Adaptation: More research is required on the psychological impact of AI integration—stress, resistance, and long-term well-being of workers.
- Localized AI Strategies: Countries like India need region-specific AI roadmaps that align with local labor dynamics, education systems, and economic priorities.

XI. CONCLUSION

Artificial Intelligence is not merely a technological advancement it is a transformative force reshaping the global job landscape. While AI introduces challenges such as job displacement, skill gaps, and ethical concerns, it simultaneously unlocks unprecedented opportunities for innovation, productivity, and inclusive growth. The future of work will depend on how effectively societies embrace human-AI collaboration, invest in reskilling ecosystems, and develop fair, transparent governance frameworks.

To ensure a balanced and equitable transition, stakeholders including governments, industries, and educational institutions must work together to prepare the workforce for AI-augmented roles. With proactive adaptation and inclusive strategies, AI can become a catalyst for human empowerment rather than a threat to employment.

“AI will not replace humans, but humans who use AI will replace those who don’t.”

REFERENCES

- [1]. V. K. Borate and S. Giri, “XML Duplicate Detection with Improved network pruning algorithm,” 2015 International Conference on Pervasive Computing (ICPC), Pune, India, 2015, pp. 1-5, doi: 10.1109/PERVASIVE.2015.7087007.
- [2]. Borate, Vishal, Alpana Adsul, Aditya Gaikwad, Akash Mhetre, and Siddhesh Dicholkar. “A Novel Technique for Malware Detection Analysis Using Hybrid Machine Learning Model,” International Journal of Advanced Research in Science, Communication and Technology (IJAR SCT), Volume 5, Issue 5, pp. 472-484, June 2025, DOI: 10.48175/IJAR SCT-27763.
- [3]. Vishal Borate, Dr. Alpana Adsul, Palak Purohit, Rucha Sambare, Samiksha Yadav and Arya Zunjarrao, “ Lung Disease Prediction Using Machine Learning Algorithms And GAN,” International Journal of Advanced



- Research in Science, Communication and Technology (IJAR SCT), Volume 5, Issue 6, pp. 171-183, June 2025, DOI: 10.48175/IJAR SCT-27926.
- [4]. Vishal Borate, Dr. Alpana Adsul, Rohit Dhakane, Shahu- raj Gawade, Shubhangi Ghodake, and Pranit Jadhav. "Machine Learning-Powered Protection Against Phish- ing Crimes," International Journal of Advanced Research in Science, Communication and Technology (IJAR SCT), Volume 5, Issue 6, pp. 302-310, June 2025, DOI: : 10.48175/IJAR SCT-27946.
- [5]. Borate, Vishal, Alpana Adsul, Aditya Gaikwad, Akash Mhetre, and Siddhesh Dicholkar. "Analysis of Mal- ware Detection Using Various Machine Learning Ap- proach," International Journal of Advanced Research in Science, Communication and Technology (IJAR SCT), Volume 4, Issue 2, pp. 314-321, November 2024, DOI: 10.48175/IJAR SCT-22159.
- [6]. Vishal Borate, Dr. Alpana Adsul, Palak Purohit, Rucha Sambare, Samiksha Yadav, Arya Zunjarrao, "A Role of Machine Learning Algorithms for Lung Disease Predic- tion and Analysis," International Journal of Advanced Research in Science, Communication and Technology (IJAR SCT), Volume 4, Issue 3, pp. 425-434, October 2024, DOI: 10.48175/IJAR SCT-19962.
- [7]. Borate, Mr Vishal, Alpana Adsul, Mr Rohit Dhakane, Mr Shahuraj Gawade, Ms Shubhangi Ghodake, and Mr Pranit Jadhav. "A Comprehensive Review of Phish- ing Attack Detection Using Machine Learning Tech- niques," International Journal of Advanced Research in Science, Communication and Technology (IJAR SCT), Volume 4, Issue 2, pp. 269-278, October 2024 DOI: 10.48175/IJAR SCT-19963.
- [8]. Vishal Borate, Dr. Alpana Adsul, Siddhesh Gaikwad, "A Systematic Approach for Skin Disease Detection Prediction by using CNN," International Journal of Advanced Research in Science, Communication and Technology (IJAR SCT), Volume 4, Issue 5, pp. 425-434, November 2024, DOI: DOI: 10.48175/IJAR SCT-22443.
- [9]. Akanksha A Kadam, Mrudula G Godbole, Vaibhavi S Divekar, Vishakha T. Mandage and Prof. Vishal K Bo- rate, "FIRE ALARM AND RESCUE SYSTEM USING IOT AND ANDROID", IJRAR - International Journal of Research and Analytical Reviews (IJRAR), E-ISSN 2348-1269, P- ISSN 2349-5138, Volume.11, Issue 2, Page No pp.815-821, May 2024.
- [10]. Prof. Vishal Borate, Prof. Aaradana Pawale, Ashwini Kotagonde, Sandip Godase and Rutuja Gangavne, "De- sign of low-cost Wireless Noise Monitoring Sensor Unit based on IOT Concept", International Journal of Emerging Technologies and Innovative Research (www.jetir.org), ISSN:2349-5162, Vol.10, Issue 12, page no.a153-a158, December-2023.
- [11]. Dnyanesh S. Gaikwad, Vishal Borate, "A REVIEW OF DIFFERENT CROP HEALTH MONITORING AND DISEASE DETECTION TECHNIQUES IN AGRICULTURE", IJRAR - International Journal of Research and Analytical Reviews (IJRAR), E-ISSN 2348-1269, P- ISSN 2349-5138, Volume.10, Issue 4, Page No pp.114- 117, November 2023.
- [12]. Prof. Vishal Borate, Vaishnavi Kulkarni and Siddhi Vidhate, "A Novel Approach for Filtration of Spam using NLP", IJRAR - International Journal of Research and Analytical Reviews (IJRAR), E-ISSN 2348-1269, P- ISSN 2349-5138, Volume.10, Issue 4, Page No pp.147- 151, November 2023.
- [13]. Prof. Vishal Borate, Kajal Ghadage and Aditi Pawar, "Survey of Spam Comments Identification using NLP Techniques", IJRAR - International Journal of Research and Analytical Reviews (IJRAR), E-ISSN 2348-1269, P- ISSN 2349-5138, Volume.10, Issue 4, Page No pp.136- 140, November 2023.
- [14]. Akanksha A Kadam, Mrudula G Godbole, Vaibhavi S Divekar and Prof. Vishal K Borate, "Fire Evacuation System Using IOT AI", IJRAR - International Journal of Research and Analytical Reviews (IJRAR), E-ISSN 2348-1269, P- ISSN 2349-5138, Volume.10, Issue 4, Page No pp.176-180, November 2023.
- [15]. Shikha Kushwaha, Sahil Dhankhar, Shailendra Singh and Mr. Vishal Kisan Borate, "IOT Based Smart Electric Meter", International Journal of Scientific Research in Computer Science, Engineering and Information Tech- nology (IJSRCSEIT), ISSN : 2456-3307, Volume 8, Issue 3, pp.51-56, May-June-2021.



- [16]. Nikita Ingale, Tushar Anand Jha, Ritin Dixit and Mr Vishal Kisan Borate, "College Enquiry Chatbot Using Rasa," International Journal of Scientific Research in Computer Science, Engineering and Information Technology(IJSRCSEIT), ISSN : 2456-3307, Volume 8, Issue 3, pp.201-206, May-June-2021.
- [17]. Pratik Laxman Trimbake, Swapnali Sampat Kamble, Rakshanda Bharat Kapoor, Mr Vishal Kisan Borate and Mr Prashant Laxmanrao Mandale, "Automatic Answer Sheet Checker," International Journal of Scientific Research in Computer Science, Engineering and Information Technology(IJSRCSEIT), ISSN : 2456-3307, Volume 8, Issue 3, pp.212-215, May-June-2021.
- [18]. Shikha Kushwaha, Sahil Dhankhar, Shailendra Singh and Mr. Vishal Kisan Borate, "IOT Based Smart Electric Meter" International Journal of Scientific Research in Science and Technology (IJSRST), ISSN: 2395-602X, Volume 5, Issue 8, pp.80-84, December-2020.
- [19]. Nikita Ingale, Tushar Anand Jha, Ritin Dixit and Mr Vishal Kisan Borate, "College Enquiry Chatbot Using Rasa," International Journal of Scientific Research in Science and Technology (IJSRST), ISSN: 2395-602X, Volume 5, Issue 8, pp.210-215, December-2020.
- [20]. Pratik Laxman Trimbake, Swapnali Sampat Kamble, Rakshanda Bharat Kapoor and Mr Vishal Kisan Borate, "Automatic Answer Sheet Checker," International Journal of Scientific Research in Science and Technology (IJSRST), ISSN: 2395-602X, Volume 5, Issue 8, pp.221-226, December-2020.
- [21]. Chame Akash Babasaheb, Mene Ankit Madhav, Shinde Hrushikesh Ramdas, Wadagave Swapnil Sunil, Prof. Vishal Kisan Borate, "IoT Based Women Safety Device using Android, International Journal of Scientific Research in Science, Engineering and Technology(IJSRSET), Print ISSN : 2395-1990, Online ISSN: 2394-4099, Volume 5, Issue 10, pp.153-158, March-April-2020.
- [22]. Harshala R. Yevlekar, Pratik B. Deore, Priyanka S. Patil, Rutuja R. Khandebharad, Prof. Vishal Kisan Borate, "Smart and Integrated Crop Disease Identification System, International Journal of Scientific Research in Science, Engineering and Technology(IJSRSET), Print ISSN : 2395-1990, Online ISSN : 2394-4099, Volume 5, Issue 10, pp.189-193, March-April-2020.
- [23]. Yash Patil, Mihir Paun, Deep Paun, Karunesh Singh, Vishal Kisan Borate, "Virtual Painting with OpenCV Using Python, International Journal of Scientific Research in Science and Technology(IJSRST), Online ISSN : 2395-602X, Print ISSN : 2395-6011, Volume 5, Issue 8, pp.189-194, November-December-2020.
- [24]. Mayur Mahadev Sawant, Yogesh Nagargoje, Darshan Bora, Shrinivas Shelke and Vishal Borate, Keystroke Dynamics: Review Paper International Journal of Advanced Research in Computer and Communication Engineering, vol. 2, no. 10, October 2013.
- [25]. S. S. Thete, R. P. Jare, M. Jungare, G. Bhagat, S. Durgule and V. Borate, "Netflix Recommendation System by Genre Categories Using Machine Learning," 2025 3rd International Conference on Device Intelligence, Computing and Communication Technologies (DICCT), Dehradun, India, 2025, pp. 196-201, doi: 10.1109/DICCT64131.2025.10986657.
- [26]. R. Dudhmal, I. Khatik, S. Kadam, S. Choudhary, S. Zurange and V. Borate, "Monitoring Students in Online Learning Environments Using Deep Learning Approach," 2025 3rd International Conference on Device Intelligence, Computing and Communication Technologies (DICCT), Dehradun, India, 2025, pp. 202-206, doi: 10.1109/DICCT64131.2025.10986425.
- [27]. A. N. Jadhav, R. Kohad, N. Mali, S. A. Nalawade, H. Chaudhari and V. Borate, "Segmenting Skin Lesions in Medical Imaging A Transfer Learning Approach," 2025 International Conference on Recent Advances in Electrical, Electronics, Ubiquitous Communication, and Computational Intelligence (RAEEUCCI), Chennai, India, 2025, pp. 1-6, doi: 10.1109/RAEEUCCI63961.2025.11048333.
- [28]. R. Kohad, S. K. Yadav, S. Choudhary, S. Sawardekar, M. Shirsath and V. Borate, "Rice Leaf Disease Classification with Advanced Resizing and Augmentation," 2025 International Conference on Recent Advances in Electrical, Electronics, Ubiquitous Communication, and Computational Intelligence (RAEEUCCI), Chennai, India, 2025, pp. 1-6, doi: 10.1109/RAEEUCCI63961.2025.11048331.
- [29]. P. More, P. Gangurde, A. Shinkar, J. N. Mathur, S. Patil and V. Borate, "Identifying Political Hate Speech using Transformer-based Approach," 2025 International Conference on Recent Advances in Electrical, Elec-



- tronics, Ubiquitous Communication, and Computational Intelligence (RAEEUCCI), Chennai, India, 2025, pp. 1- 6, doi: 10.1109/RAEEUCCI63961.2025.11048250.
- [30]. S. Naik, A. Kandelkar, R. Agnihotri, S. Puro- hit, V. Deokate and V. Borate, "Use of Ma- chine Learning Algorithms to assessment of Drink- ing Water Quality in Environment," 2025 Interna- tional Conference on Intelligent and Cloud Comput- ing (ICoICC), Bhubaneswar, India, 2025, pp. 1-6, doi: 10.1109/ICoICC64033.2025.11052015.
- [31]. A. Pisote, S. Mangate, Y. Tarde, H. A. Inamdar, S. Ashok Nangare and V. Borate, "A Compara- tive Study of ML and NLP Models with Sentimen- tal Analysis," 2025 International Conference on Ad- vancements in Power, Communication and Intelligent Systems (APCI), Kannur, India, 2025, pp. 1-5, doi: 10.1109/APCI65531.2025.11136837.
- [32]. A. Pisote, D. N. Bhatarkar, D. S. Thosar, R. D. Thosar, A. Deshmukh and V. Borate, "Detection of Blood Clot in Brain Using Supervised Learning Algorithms," 2025 6th International Conference for Emerging Technol- ogy (INCET), BELGAUM, India, 2025, pp. 1-6, doi: 10.1109/INCET64471.2025.11140127.
- [33]. S. Darekar, P. Nilekar, S. Lilhare, A. Chaudhari, R. Narayan and V. Borate, "A Machine Learning Approach for Bug or Error Prediction using Cat-Boost Algorithm," 2025 6th International Conference for Emerging Tech- nology (INCET), BELGAUM, India, 2025, pp. 1-5, doi: 10.1109/INCET64471.2025.11140996.
- [34]. R. Tuptewar, S. Deshmukh, S. Sonavane, R. Bhi- lare, S. Darekar and V. Borate, "Ensemble Learning for Burn Severity Classification," 2025 6th Interna- tional Conference for Emerging Technology (INCET), BELGAUM, India, 2025, pp. 1-5, doi: 10.1109/IN- CET64471.2025.11139863.
- [35]. S. S. Doifode, S. S. Lavhate, S. B. Lavhate, R. Shirb- hate, A. Kulkarni and V. Borate, "Prediction of Drugs Consumption using Neutral Network," 2025 6th Interna- tional Conference for Emerging Technology (INCET), BELGAUM, India, 2025, pp. 1-5, doi: 10.1109/IN- CET64471.2025.11139984.
- [36]. S. Khawate, S. Gaikwad, Y. Davda, R. Shirbhate, P. Gham and V. Borate, "Dietary Monitoring with Deep Learning and Computer Vision," 2025 International Conference on Computing Technologies Data Commu- nication (ICCTDC), HASSAN, India, 2025, pp. 1-5, doi: 10.1109/ICCTDC64446.2025.11158839.
- [37]. A. Dhore, P. Dhore, P. Gangurde, A. Khadke, S. Singh and V. Borate, "Face Morphing Attack Detection Using Deep Learning," 2025 International Conference on Com- puting Technologies Data Communication (ICCTDC), HASSAN, India, 2025, pp. 01-06, doi: 10.1109/IC- CTDC64446.2025.11158160.
- [38]. Y. Khalate, N. Khare, S. Kadam, S. Zurange, J. N. Mathur and V. Borate, "Custom Lightweight En- cryption for Secure Storage using Blockchain," 2025 5th International Conference on Intelligent Technolo- gies (CONIT), HUBBALI, India, 2025, pp. 1-5, doi: 10.1109/CONIT65521.2025.11166943.
- [39]. Y. K. Mali, S. Dargad, A. Dixit, N. Tiwari, S. Narkhede and A. Chaudhari, "The Utilization of Block-chain Innovation to Confirm KYC Records," 2023 IEEE International Carnahan Conference on Security Tech- nology (ICCST), Pune, India, 2023, pp. 1-5, doi: 10.1109/ICCST59048.2023.10530513.
- [40]. Mahajan, Krishnal, Sumant Bhange, Prajakta Gade, and Yogesh Mali. "Guardian Shield: Real Time Transaction Security."
- [41]. Y. K. Mali, S. A. Darekar, S. Sopal, M. Kale, V. Kshatriya and A. Palaskar, "Fault Detection of Under- water Cables by Using Robotic Operating System," 2023 IEEE International Carnahan Conference on Security Technology (ICCST), Pune, India, 2023, pp. 1-6, doi: 10.1109/ICCST59048.2023.10474270.
- [42]. Mali, Yogesh, Krishnal Mahajan, Sumant Bhange, and Prajakta Gade. "Guardian Shield: Real Time Transaction Security."
- [43]. Bhoje, Tejaswini, Aishwarya Mane, Vandana Navale, Sangeeta Mohapatra, Pooja Mohbansi, and Vishal Bo- rate. "A Role of Machine Learning Algorithms for Demand Based Netflix Recommendation System."
- [44]. Thube, Smita, Sonam Singh, Poonam Sadafal, Shweta Lilhare, Pooja Mohbansi, Vishal Borate, and Yogesh Mali. "Identifying New Species of Dogs Using Machine Learning Model."
- [45]. Kale, Hrushikesh, Kartik Aswar, and Yogesh Mali Kisan Yadav. "Attendance Marking using Face Detection." International Journal of Advanced Research in Science, Communication and Technology : 417– 424.



- [46]. Mali, Yogesh, and Viresh Chapte. "Grid based authentication system." *International Journal* 2, no. 10 (2014).
- [47]. N. Nadaf, G. Chendke, D. S. Thosar, R. D. Thosar, Chaudhari and Y. K. Mali, "Development and Evaluation of RF MEMS Switch Utilizing Bimorph Actuator Technology for Enhanced Ohmic Performance," 2024 International Conference on Control, Computing, Communication and Materials (ICCCCM), Prayagraj, India, 2024, pp. 372-375, doi: 10.1109/ICC-CCM61016.2024.11039926.
- [48]. Rojas, M., Mal'ı, Y. (2017). Programa de sensibilizaci3n sobre norma tecnica de salud N° 096 MINS/DIGESAV. 01 para la mejora del manejo de residuos solidos hospitalarios en el Centro de Salud Palmira, Independencia- Huaraz, 2017.
- [49]. Modi, S., Nalawade, S., Zurange, S., Mulani, U., Borate, V., Mali, Y. (2025). Python-Driven Mapping of Technological Proficiency with AI to Simplify Transfer Applications in Education. In: Saha, A.K., Sharma, H., Prasad, M., Chouhan, L., Chaudhary, N.K. (eds) *Intelligent Vision and Computing. ICIVC 2024*. Studies in Smart Technologies. Springer, Singapore. <https://doi.org/10.1007/978-981-96-4722-41>.
- [50]. Mulani, Umar, Vinod Ingale, Rais Mulla, Ankita Avthankar, Yogesh Mali, and Vishal Borate. "Optimizing Pest Classification in Oil Palm Agriculture using Fine-Tuned GoogleNet Deep Learning Models." *International Journal of Engineering Technology (GIJET)* 11 (2025).
- [51]. D. Chaudhari, R. Dhaygude, U. Mulani, P. Rane, Y. Khatke and V. Borate, "Onion Crop Cultivation Prediction of Yields by Machine Learning," 2024 2nd International Conference on Advances in Computation, Communication and Information Technology (ICAICIT), Faridabad, India, 2024, pp. 244-249, doi: 10.1109/ICAIC-CIT64383.2024.10912135.
- [52]. Mali, Y. NilaySawant, "Smart Helmet for Coal Mining,". *International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)* Volume, 3.
- [53]. Mali, Y.K. Marathi sign language recognition methodology using Canny's edge detection. *Sadhana* 50, 268 (2025). <https://doi.org/10.1007/s12046-025-02963-z>.
- [54]. Y. Mali, M. E. Pawar, A. More, S. Shinde, V. Borate and R. Shirbhate, "Improved Pin Entry Method to Prevent Shoulder Surfing Attacks," 2023 14th International Conference on Computing Communication and Networking Technologies (ICCCNT), Delhi, India, 2023, pp. 1-6, doi: 10.1109/ICCCNT56998.2023.10306875.
- [55]. V. Borate, Y. Mali, V. Suryawanshi, S. Singh, V. Dhoke and A. Kulkarni, "IoT Based Self Alert Generating Coal Miner Safety Helmets," 2023 International Conference on Computational Intelligence, Networks and Security (ICCINS), Mylavaram, India, 2023, pp. 01-04, doi: 10.1109/ICCINS58907.2023.10450044.
- [56]. Y. K. Mali and A. Mohanpurkar, "Advanced pin entry method by resisting shoulder surfing attacks," 2015 International Conference on Information Processing (ICIP), Pune, India, 2015, pp. 37-42, doi: 10.1109/IN-FOP.2015.7489347.
- [57]. Mali, Y. NilaySawant, "Smart Helmet for Coal Mining,". *International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)* Volume, 3.
- [58]. Mali, Y. (2023). TejalUpadhyay, "Fraud Detection in Online Content Mining Relies on the Random Forest Algorithm", *SWB*, 1(3), 13-20.
- [59]. Kohad, R., Khare, N., Kadam, S., Nidhi, Borate, V., Mali, Y. (2026). A Novel Approach for Identification of Information Defamation Using Sarcasm Features. In: Sharma, H., Chakravorty, A. (eds) *Proceedings of International Conference on Information Technology and Intelligence. ICITI 2024. Lecture Notes in Networks and Systems*, vol 1341. Springer, Singapore. https://doi.org/10.1007/978-981-96-5126-9_12.
- [60]. Amit Lokre, Sangram Thorat, Pranali Patil, Chetan Gadekar, Yogesh Mali, "Fake Image and Document Detection using Machine Learning," *International Journal of Scientific Research in Science and Technology (IJSRST)*, Print ISSN: 2395-6011, Online ISSN: 2395-602X, Volume 5, Issue 8, pp. 104-109, November-December - 2020.

