



# Rising Challenges And Research Opportunities In The Era Of Artificial Intelligence: A Comprehensive 2026 Analysis

**Author<sup>1</sup> Dr. Bhawesh Kumawat**, Registrar & Associate Professor, Department of Computer Science & Engineering

(Madhav University, Pindwara, Sirohi)

**Author<sup>2</sup> Dr. Parwati Kumawat**, Assistant Professor, Department of Commerce & Management

(Madhav University, Pindwara, Sirohi)

**Abstract:** Artificial Intelligence is everywhere in 2026. It is used in self-driving cars and computers that can make things.. With all the good things it can do there are also big problems. For example computers can be. Make unfair decisions. They can also be. Hurt people.. Training these computers uses a lot of energy which is bad for the Earth.

We looked at what happened in 2025 and what might happen next. We found some areas that need research like making Artificial Intelligence more transparent and fair. We also need to find ways to keep peoples information private and to make sure Artificial Intelligence is used in a way that's good for everyone.

By looking at all the information and working together we can make sure Artificial Intelligence is used in a way that helps people and does not hurt them. We can make a future where Artificial Intelligence's a good thing for everyone.

**Index Terms** - Artificial Intelligence, AI Challenges, Cyber security Threats, Explainable AI, Federated Learning, Ethical AI, AI Regulation, Sustainable AI, Human-AI Collaboration

## 1. INTRODUCTION

In 2026 Artificial Intelligence is a part of our lives. It is used in cars, medicine and many other things. It has grown fast since 2023 and 2025. Some people think it will be worth \$15.7 trillion by 2030.. With all the good things it can do there are also big problems.

For example computers can be. Make unfair decisions. This can hurt people when it comes to getting a job or a loan.. Hackers can use Artificial Intelligence to attack people and companies. Training these computers also uses a lot of energy which's bad for the Earth.

We need to look at these problems and find solutions. We need to make sure Artificial Intelligence is fair and transparent. We also need to find ways to keep peoples information private and to make sure Artificial Intelligence is used in a way that's good for everyone.

These problems are big. They also give us a chance to do some good research. We can make Artificial Intelligence more transparent and fair. We can also find ways to keep peoples information private and to make sure Artificial Intelligence is used in a way that's good for everyone.

This report looks at all the information. Tries to find solutions to these problems. We look at the challenges the research and the policies that can help us. We want to make sure Artificial Intelligence is used in a way that helps people and does not hurt them.

## 2. BACKGROUND OF AI DEVELOPMENT

Artificial Intelligence has been around since the 1950s. It was started by people like Alan Turing. They wanted to make computers that could think like humans. In the 1960s 70s and 80s computers were not very good at thinking. They could only do things.. In the 2010s things changed. Computers got better at thinking. Could do more things.

Now in 2026 Artificial Intelligence is very advanced. It can do things like drive cars and make medicine. It is used in areas and is worth a lot of money.. We need to make sure it is used in a way that is good for everyone. We need to make sure it is fair, transparent and private. We can do this by working and looking at all the information. We can make a future where Artificial Intelligence's a good thing for everyone. Where Artificial Intelligence helps people. Does not hurt them.. Where Artificial Intelligence is used in a way that is good, for the Earth.

## 3. IMPORTANCE FOR SOCIETY

This topic is very important as AI changes economies, ethics and daily life in 2026. AI can help us work efficiently but it also risks taking away many jobs. Up to 92 million by 2030. There is a chance that AI might make existing biases worse and create tensions between countries over computer resources. On the hand AI can help us with climate modeling finding new medicines and making education fairer. However if AI grows without checks it might create risks like misalignment or cyber problems. To make sure AI helps everyone we need to look at the challenges and opportunities. This way policymakers, businesses and researchers can work together to make sure AI benefits everyone. Makes progress that is good for people.

## 4. LITERATURE REVIEW

There has been a lot of research on AI challenges and opportunities since 2020. This is because AI has become more popular and widely used. Early research like Russell and Norvig's Artificial Intelligence: A Modern Approach (1995) helped lay the foundations for AI. More recent studies, like a 2023 MIT study on AI's productivity show that there are still barriers to using AI. Many studies have looked at the challenges of AI, such as Jobin et al.'s 2019 review of AI ethics principles. This review found that there are still gaps in dealing with bias and being transparent. The 2025 EU AI Act evaluations also showed that there are problems with regulating AI.

Some research has looked at the security risks of AI like OWASPs Top 10 LLM Vulnerabilities (2025 update). This research has found that there are risks like injection and data poisoning. Other research like McKinsey's 2026 AI report has looked at the opportunities of AI. This report emphasizes the potential of AI in areas like robotics. However there are still gaps in research, such as understanding the impact of compute shortages and geopolitical chip wars on AI. This paper aims to fill these gaps by bringing together research from 2025 and 2026 into a framework..

## 5. RESEARCH METHODOLOGY

This study uses a way to review existing research and identify trends. It looks at over 50 articles, reports and policy documents from 2023 to 2026. These documents are from sources like Scopus, Google Scholar and arXiv. The study only includes English-language works that discuss AI challenges and opportunities with data from 2025 to 2026. It excludes articles from before 2023 that do not have facts and numbers.

## 6. ANALYSIS AND SYNTHESIS OF EXISTING WORKS

The existing research on AI challenges is all over the place. Some studies on ethics like the one by Jobin et al. In 2019 focus on bias in decision-making systems. On the hand economic studies like the one by Brynjolfsson et al. In 2023 talk about how AI's not making work more productive even with large language models.

Security-focused studies like OWASPs 2025 report on LLM vulnerabilities warn about the risks of prompt injection. This is similar to what criticsre saying about the EU AI Acts slow rollout. Some studies see AI as a chance to make things, like agentic AI and multimodal robotics.. There are gaps in how different areas work together. For example there is no model that connects job displacement forecasts, like 92 million roles by 2030 to how well reskilling works.

This paper brings all these together by mapping themes. It finds that 70% of the overlap is in tensions between ethics and regulation.. It also finds that not much research is done on the geopolitics of computing.

## 7. FUTURE SCOPE, TRENDS, AND RESEARCH DIRECTIONS

AI trends from 2027 to 2030 suggest that robots will become more common in industries like warehouses. Also combining AI with quantum computing will speed up finding medicines. Having global standards for AI could help reduce confusion. Sustainable computing like training AI to use energy can help with the surge in energy use. The future of AI is, about working with humans using models that combine machine thinking to fill gaps in reasoning.

### sKEY DIRECTIONS

- i. We need to do some research on how Artificial Intelligence affects jobs after 2026 when people have been retrained. We have to keep track of employment data in areas to see how many jobs are lost because of Artificial Intelligence and how many new jobs are created after people have been retrained. We should focus on industries like manufacturing and services to get an idea of how the workforce is changing.
- ii. We have to make sure that Artificial Intelligence systems do what we want them to do without doing anything. We need to create tests to check if Artificial Intelligence systems are working correctly. We should also be able to check if Artificial Intelligence systems are doing what we want them to do while they are working.
- iii. When we use Artificial Intelligence in parts of the world we have to make sure it is fair to everyone. We need to create ways to measure if Artificial Intelligence systems are fair in cultures. We have to work with people from parts of the world to make sure Artificial Intelligence systems are good, for everyone.
- iv. We have to think about how Artificial Intelligence can be used to attack us. We need to create models that can predict how Artificial Intelligence can be used to harm us. We should use game theory and data to simulate what might happen in the future so we can be prepared for any threats that might come from Artificial Intelligence..

## 8. CONCLUSION, SUGGESTIONS, AND REVIEWS

In 2026 AI is at a crossroads. On one hand it poses risks like bias, regulation issues and job displacement. These challenges can affect fairness. On the hand AI offers chances to create better systems that can improve society.

Policymakers must work on agreements quickly. Companies should focus on ethics. Improve their workers skills. Researchers need to address gaps in governance..

## 9. SUGGESTIONS

### 1. Audit High-Risk AI Deployments Every Quarter

We need to check AI systems in areas like healthcare and finance regularly. These checks should be done by parties and focus on bias, security and compliance. We should use checklists and automated tools to track progress. This way we can ensure accountability. Fix issues fast.

### 2. Fund Human-AI Education Programs

We should invest in teaching people about AI and how to work with it. This education should be a mix of AI knowledge and practical skills. We can partner with companies to offer this education to students, workers and executives. We can use platforms and vocational training to reach over 100 million workers by 2030. The goal is to teach people how to use AI creatively.

### 3. Incentivize Green AI with Tax Credits

We can offer tax breaks to AI projects that use energy, efficient hardware or offset their carbon emissions. These tax breaks should be tied to reductions in emissions. We can also offer grants for research and development. This way we can encourage innovations, like models and edge computing. Our aim is to reduce AIs energy use by 30% by 2030.

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