

RESEARCH SUMMARY

Artificial Intelligence: An Introduction for Policymakers

Artificial intelligence (AI) will have a huge impact on the economy. To ensure the effect is a net positive, policymakers need to understand AI at a deeper level to shape a governance regime that maximizes the social benefits of AI and mitigates its risks. In this paper, Matthew G. Mittelstaedt introduces the basic concepts in AI system design and surveys the core technologies that it comprises.

After a Decade of Limited-Purpose AI, an AI Paradigm Shift

The technology is now catching pace with expectations, thanks to large-scale systems trained on broad sets of data that can be easily adapted to a wide range of practical applications. As a result, AI is being applied everywhere from the arts and linguistics to chemistry and computer coding.

Just as previous general-purpose technologies such as electricity transformed society, AI has the potential to revolutionize the entire economic system. And just as policymakers need a working knowledge of economics, they need a working understanding of AI. Why? Because AI is likely to affect all policy domains.

AI Has Little in the Way of Associated Law or Policy

Existing laws treat AI in a general sense; they do not focus on specific applications. Yet many of AI's benefits, effects, and issues can be understood only in terms of their specific applications and implementations.

The list of open questions in AI policy is long and touches all federal departments. For example:

- How can US industry compete with China's state-led AI investments?
- How can algorithms be developed and designed to support democracy, freedom, and fairness?
- How can robust supply chains be built to reliably source the diverse range of materials and components that enable AI systems?
- What education policies can incentivize success in AI-related fields?
- How can governments and companies adequately protect the vast and sensitive data used to create their AI systems?
- What sort of algorithmic designs could help spot and mitigate bias?
- Can AI system innovation in energy management be used to help reduce costs and fight climate change?
- What standards and best practices can be passed on to the private sector to minimize AI cyber risks?

Key Takeaway

The sudden explosion in AI progress is adding pressure on policymakers to understand AI in greater depth. This paper explains how the technology works. Along the way, it equips readers with key terms, fundamental concepts, and a toolbox of knowledge that should be supplemented with application-specific expertise.