

AI GOVERNANCE WORKSHOP

Overview of the technology and its ethics



Agenda Items

- Understanding Artificial Intelligence
- Historical Development of AI
- Applications of Artificial Intelligence
- Challenges and Ethical Considerations
- AI Governance and Regulation
- Group Case Studies

Introductions



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Understanding Artificial Intelligence

Definition and Scope of AI

AI Definition

AI is a field of computer science that focuses on the development of intelligent machines that can perform tasks that typically require human intelligence, such as visual perception, speech recognition, decision-making, and language translation.

AI Scope

AI has a broad scope, which includes various subfields, such as machine learning, natural language processing, robotics, and computer vision. These subfields have the potential to transform various industries, such as healthcare, finance, manufacturing, and transportation.

Types of Artificial Intelligence

Rule-based Systems

Rule-based systems are a type of AI where the system follows a set of predefined rules to make decisions or take actions. This approach is suitable for applications where the problem domain is well defined, and the rules are clear.

Machine Learning

Machine learning is a type of AI where the system learns from data without being explicitly programmed. This approach is suitable for applications where the problem domain is complex, and the rules are not well defined.

Deep Learning

Deep learning is a type of machine learning that uses neural networks with many layers to learn from data. This approach is suitable for applications that require high accuracy and can handle large amounts of data. Chat GPT is a type of deep learning based on a neural network architecture that leverages natural language processing.



Types of Machine Learning

Supervised Learning

This is labelled data that is grouped or classified into categories via the AI system.

Unsupervised Learning

Unlabeled data, typically used for pattern detection.

Reinforcement Learning

The AI system is rewarded for performing a task well and penalized for not performing it well.



Key Components and Technologies

AI relies on different components and technologies such as natural language processing, computer vision, and neural networks to perform complex tasks and learn from data.

Historical Development of AI

Early Concepts and Milestones

Early Concepts of AI

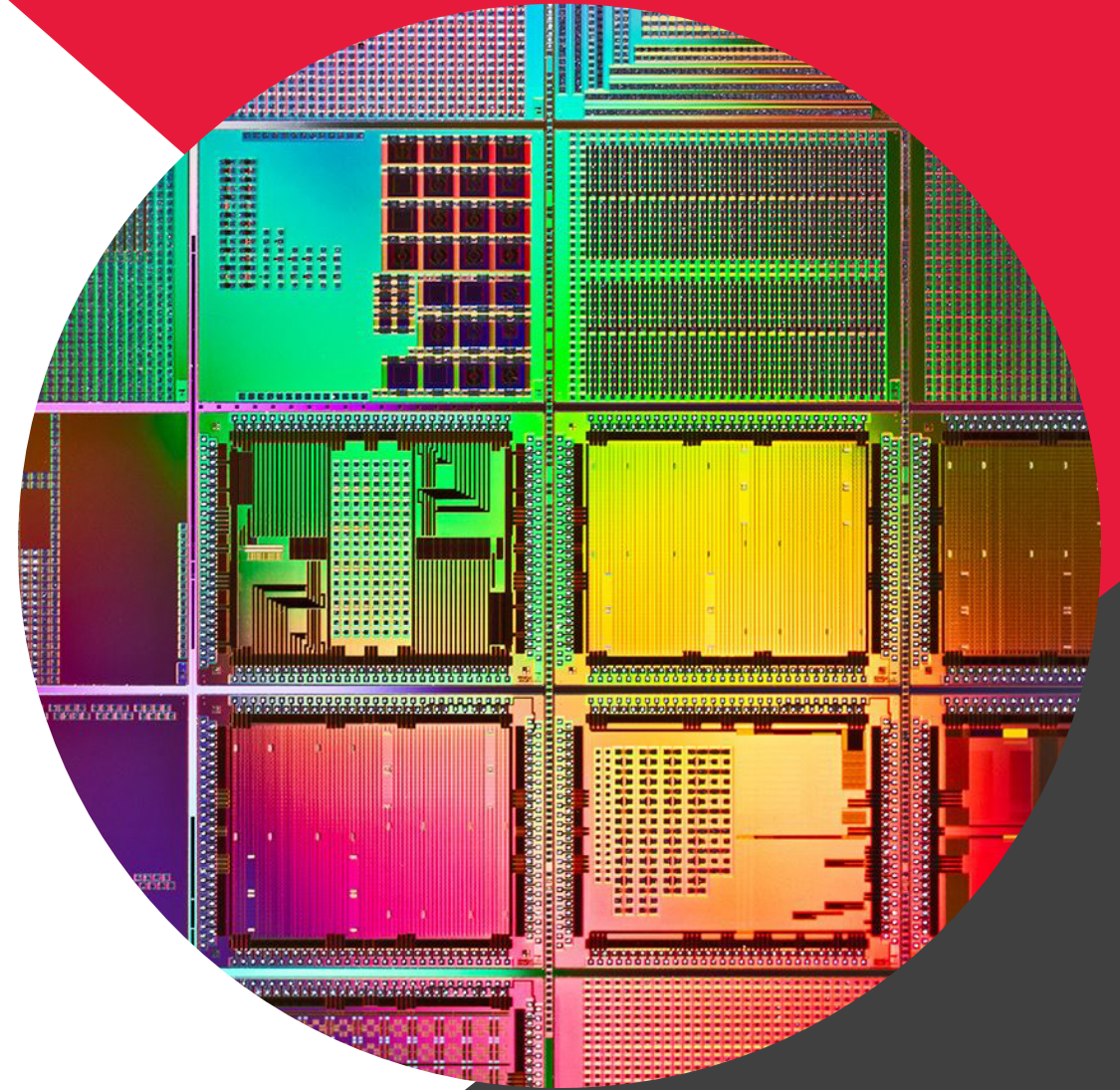
The concept of AI dates to ancient times, but the modern era of AI began in the 1950s with the development of computers and algorithms capable of performing basic tasks.

Expert Systems

Expert systems were one of the earliest AI breakthroughs, enabling machines to perform tasks that would normally require human expertise.

Machine Learning

Machine learning is a subfield of AI that allows computers to learn from data and improve their performance over time. It has been instrumental in various AI breakthroughs, including image recognition and natural language processing.



Growth in Research and Applications

Advancements in AI Research

Recent years have seen significant advancements in AI research, with deep learning, natural language processing, and computer vision paving the way for future innovation.

Applications of AI in Healthcare

AI is revolutionizing healthcare by enabling faster, more accurate diagnoses, predicting disease outbreaks, and developing new drugs.

Applications of AI in Finance

AI is transforming the finance industry by improving fraud detection, predicting market trends, and automating trading.



Breakthroughs and Current Advancements

AlphaGo's Victory

AlphaGo's victory over a human world champion in the game of Go was a breakthrough in AI and demonstrated the ability of AI to perform complex tasks that require human-level intelligence.

GPT-3

GPT-3 is a language processing model with 175 billion parameters that can generate human-like text. It represents a major advancement in natural language processing and has the potential to transform the way we interact with machines.

Robotics and Autonomous Vehicles

AI is advancing rapidly in areas such as robotics and autonomous vehicles. Self-driving cars and drones are already in use, and the potential applications of AI in these areas are vast.



Applications of Artificial Intelligence

AI in Healthcare

AI has the potential to transform healthcare by enabling personalized medicine, early disease detection, and more efficient medical diagnosis. This technology can help healthcare providers to deliver more accurate and effective treatment to patients.



AI in Finance

Fraud Detection

AI is used in finance for fraud detection by identifying anomalies in financial transactions and patterns that may indicate fraudulent activities.

Portfolio Management

AI-powered portfolio management helps investors to manage their portfolios more efficiently by providing data-driven insights, analyzing trends, and identifying potential risks and opportunities.

Risk Assessment

AI is used in finance for risk assessment by analyzing large amounts of data in real-time and predicting potential risks that may impact financial outcomes.



AI in Everyday Life and Industries

AI in Everyday Life

AI is transforming our everyday lives through virtual assistants, home automation, and other applications that make our lives easier and more convenient.

AI in Transportation

AI is transforming the transportation industry with self-driving cars and smart traffic management systems, making transportation safer and more efficient.

AI in Manufacturing

AI is transforming the manufacturing industry by improving production efficiency and quality control, reducing costs, and enabling predictive maintenance.



Challenges and Ethical Considerations

Bias and Fairness in AI Algorithms

Algorithmic Bias

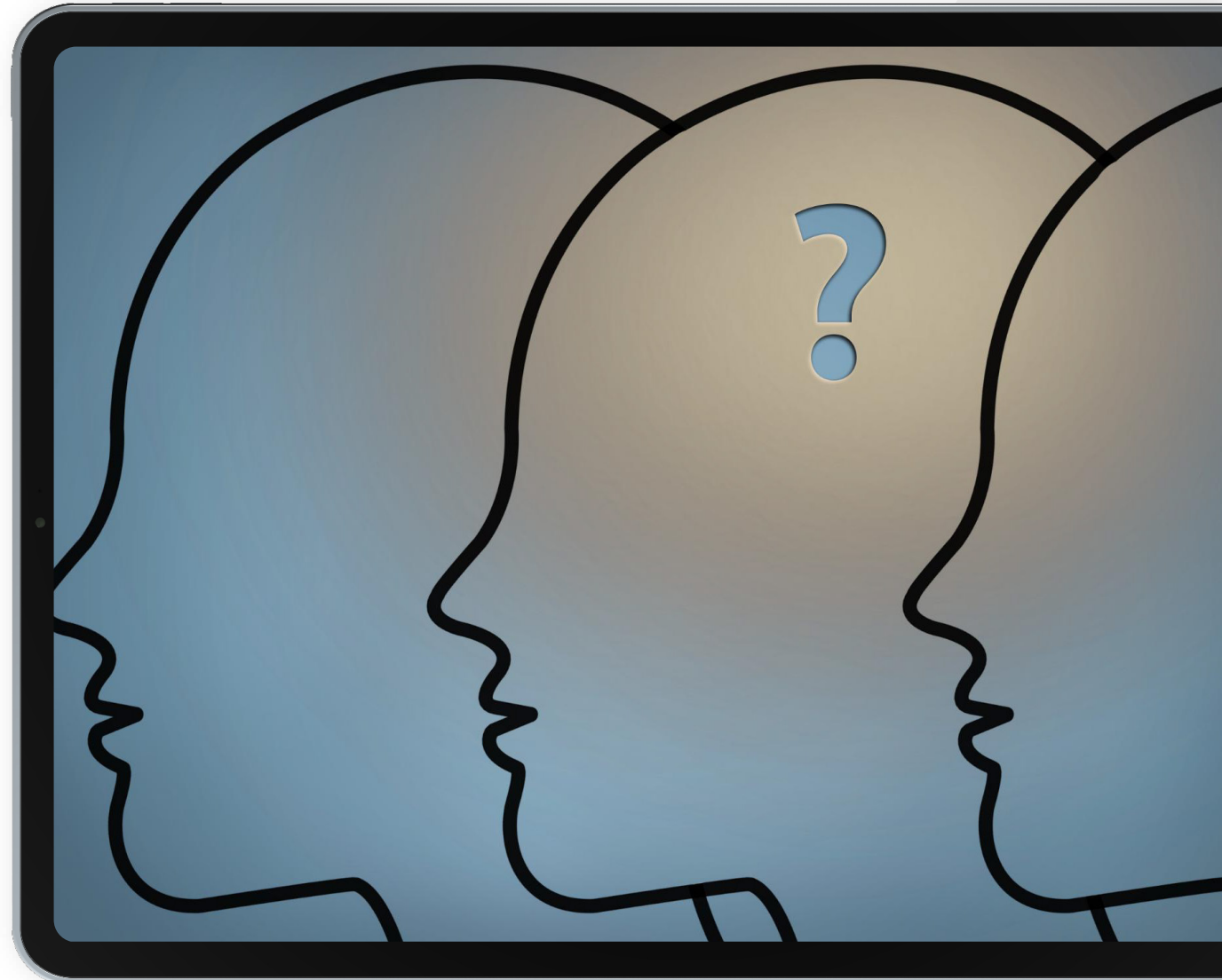
AI algorithms can be biased and unfair, leading to discrimination against certain groups. This can have serious consequences, including perpetuating social inequality and reinforcing harmful stereotypes.

Ethical Considerations

Addressing algorithmic bias and unfairness requires careful ethical considerations, including transparency and accountability in the development and deployment of AI systems.

Technical Solutions

Technical solutions, including data preprocessing, model selection, and post-processing, can be used to address algorithmic bias and ensure fairness in AI systems.



Privacy and Data Security

Privacy Concerns

AI relies on large amounts of data, and this raises concerns about privacy, confidentiality and the responsible use of data. Ensuring privacy is crucial for building trust in AI.

Data Security

Ensuring the security of data is crucial for preventing data breaches, cyberattacks, and other security incidents that can compromise confidential information and harm individuals or organizations.



Social and Economic Impact

Transformation of Society and Economy

AI has the potential to transform society and the economy by improving efficiency, productivity, and innovation in various fields such as healthcare, finance, education, and transportation.

Job Displacement

One of the major concerns with AI is job displacement. Automation of tasks can lead to loss of jobs, especially in routine and low-skilled occupations. It is important to address this issue and find ways to reskill and upskill the workforce.

Unequal Access to Benefits

Another concern with AI is unequal access to its benefits. The benefits of AI must be widely distributed, and efforts should be made to ensure that everyone has access to the benefits of AI, regardless of their socioeconomic status or geographical location.



AI Governance and Regulation

The Need for AI Governance

AI governance is essential to address the ethical and social challenges posed by AI. It requires cooperation between various stakeholders, including governments, industry, and civil society, to ensure that the benefits of AI are maximized while minimizing the risks.

Existing Frameworks and Policies

Ethical Principles

Existing ethical principles for AI governance aim to ensure that AI is developed and used in ways that are consistent with human values, rights, and dignity.

Legal Regulations

Existing legal regulations for AI governance aim to ensure that AI is developed and used in ways that are safe, transparent, and accountable, and that respect privacy and data protection laws.

Industry Standards

Existing industry standards for AI governance aim to ensure that AI is developed and used in ways that are reliable, interoperable, and scalable, and that promote innovation and fair competition.

A large, stylized graphic of the letters 'AI' in a glowing blue and green font, set against a background of a complex digital network with nodes and lines.

Future Directions and Global Cooperation

Global Cooperation

The future of AI governance requires global cooperation and collaboration between various stakeholders, including governments, industry leaders, and civil society organizations.

Ethical Challenges

The future of AI governance requires addressing complex ethical challenges, including issues related to privacy, bias, and transparency.

Legal Challenges

The future of AI governance requires addressing complex legal challenges, including issues related to liability, accountability, and intellectual property rights.

Benefit Distribution

The future of AI governance requires ensuring that the benefits of AI are widely distributed and that there is equitable access to AI technologies and their benefits.



Group Case Studies

Group Case Studies

INSTRUCTIONS

Forming Groups

We have three case studies. You will form groups of no more than 6 individuals to a group. There may be a repeat of case studies.

Assigning Case Studies

Each of you will receive a copy of the case studies.

We will assign one case study per group.

Group Discussion and Analysis

Each group should appoint a facilitator to guide the discussion and a scribe to take notes.

Discuss the potential root causes that could have resulted in the issue.

Brainstorm on the solutions to solve the issue.

Presentation and Feedback

Each group will receive 5 minutes to present their findings and proposed solutions to the larger group. Time will be based on the number of groups.

Feel free to use PowerPoint if you would like to display it on the screen.

After each presentation we will open the floor for questions and feedback from other groups.

Rules of engagement - constructive feedback and cross-group collaboration.
No one is wrong in this setting.

Conclusion

We will summarize the key points and actionable items identified by each group.

We will highlight common themes and unique insights that emerged during the discussion.