

ARTIFICIAL INTELLIGENCE (AI) FOR CHILD AND WOMEN PROTECTION



WHO AM I



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What is intelligence?

- All but the simplest human behavior is ascribed to intelligence. Psychologists generally **do not characterize** human intelligence **by just one trait** but by the **combination of many diverse abilities**.
- Learning:
 - The simplest is learning by trial and error
 - Involves memorizing of individual items and procedures
- Reasoning:
 - Deductive case the truth of the premises guarantees the truth of the conclusion
 - Inductive case the truth of the premise lends support to the conclusion without giving absolute assurance

What is intelligence?

- Problem solving:
 - Systematic search through a range of possible actions in order to reach some predefined goal or solution
- Perception:
 - The environment is scanned by means of various sensory organs and the scene is decomposed into separate objects in various spatial relationships
 - Analysis is complicated by the fact that an object may appear different depending on the angle from which it is viewed, the direction and intensity of illumination in the scene, and how much the object contrasts with the surrounding field.
- Language:
 - Is a system of signs having meaning by convention. In this sense, language need not be confined to the spoken word.

What is artificial intelligence?

- Artificial intelligence (AI)
 - is the ability of a computer or a robot controlled by a computer, to do tasks that are usually done by humans because they require human intelligence and discernment.
 - Although there are no AIs that can perform the wide variety of tasks an ordinary human can do, some AIs can match humans in specific tasks.

What is artificial intelligence?

- Artificial Intelligence (AI)

- is a branch of computer science that focuses on creating intelligent, machines capable of performing tasks that typically require human intelligence.
- has witnessed remarkable advancements in recent years, making significant contributions to various fields and industries.
- normally require human intelligence, such as visual perception, speech recognition, decision-making, and language translation.
- the principle of simulating human intelligence in machines using techniques like machine learning, natural language processing, computer vision, and robotics

Strong AI vs. weak AI

- *Narrow AI*: Also known as weak AI, Narrow AI is designed to perform **specific tasks within a limited domain**. Examples include voice assistants (e.g., Siri, Alexa), recommendation systems, and facial recognition software.
- *General AI*: General AI refers to the development of machines that possess the **ability to understand, learn, and perform any intellectual task that a human being can do**. Achieving this level of AI remains a long-term goal and is yet to be fully realized.

Types of AI

- Reactive machines: These AI systems **have no memory** and are **task-specific**. An example is Deep Blue, the IBM chess program that beat Garry Kasparov in the 1990s. Deep Blue can identify pieces on a chessboard and make predictions, but because it has no memory, it cannot use past experiences to inform future ones.
- Limited memory: These AI systems **have memory**, so they can **use past experiences** to **inform future decisions**. Some of the decision-making functions in self-driving cars are designed this way.

Types of AI

- *Theory of mind*: Theory of mind is a psychology term. When applied to AI, it means the system would have the **social intelligence to understand emotions**. This type of AI will be able to infer human intentions and predict behavior, a necessary skill for AI systems to become integral members of human teams.
- *Self-awareness*: In this category, AI systems have a sense of self, which gives them consciousness. Machines with self-awareness understand their own current state. This type of AI does not yet exist.

AI Applications

- Healthcare: AI has made significant contributions to the healthcare industry, aiding in the **diagnosis and treatment of diseases**. Machine learning algorithms can analyze medical data to detect patterns and predict outcomes, leading to better patient care and improved efficiency in healthcare operations.
- Finance: AI is widely used in the finance sector for tasks like **fraud detection, algorithmic trading, and customer service**. Machine learning models analyze vast amounts of financial data to identify anomalies and make informed decisions in real-time.

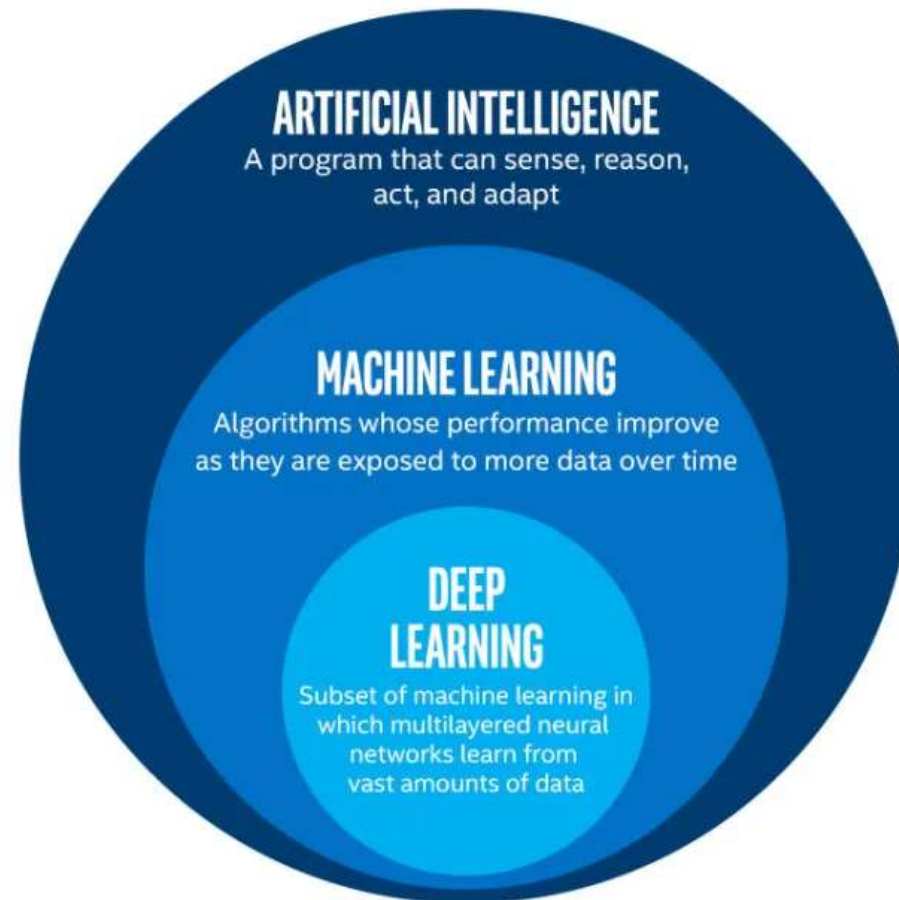
AI Applications

- *AI in entertainment and media*: The entertainment business uses AI techniques for targeted advertising, recommending content, distribution, detecting fraud, creating scripts and making movies. Automated journalism helps newsrooms streamline media workflows reducing time, costs and complexity. Newsrooms use AI to automate routine tasks, such as data entry and proofreading; and to research topics and assist with headlines.
- *Transportation*: Self-driving cars and autonomous vehicles are some of the most prominent applications of AI in transportation. AI algorithms enable vehicles to perceive their surroundings, make decisions, and navigate safely, leading to increased road safety and improved transportation efficiency.

AI Applications

- Retail: AI is transforming the retail industry with personalized customer experiences, demand forecasting, and inventory management. Recommendation systems use AI techniques to provide tailored product suggestions, enhancing customer satisfaction and increasing sales.
- Manufacturing: AI-driven automation and robotics have revolutionized the manufacturing sector. Smart factories employ AI-powered systems to optimize production processes, monitor equipment health, and predict maintenance needs, leading to increased productivity and reduced downtime.

AI, Machine Learning, and Deep Learning



AI, Machine Learning, and Deep Learning

- Artificial Intelligence:

- Artificial intelligence, also called machine intelligence, can be understood by an intelligence, unlike the natural intelligence shown by humans, which is demonstrated by machines.
- It looks at ways of designing intelligent devices and systems that can address problems creatively that are often treated as a human prerogative.
- Thus, AI means that a machine somehow imitates human behavior.

AI, Machine Learning, and Deep Learning

- Machine Learning:

- Machine learning is an AI's subset and consists of techniques that enable computers to recognize data and supply AI applications. Different algorithms (e.g., neural networks) contribute to problem resolution in ML.

- Deep Learning:

- Deep learning, often called deep neural learning or deep neural network, is a subset of machine learning that uses neural networks to evaluate various factors with a similar framework to a human neural system. It has networks that can learn from unstructured or unlabeled data without supervision.

Advantages of AI

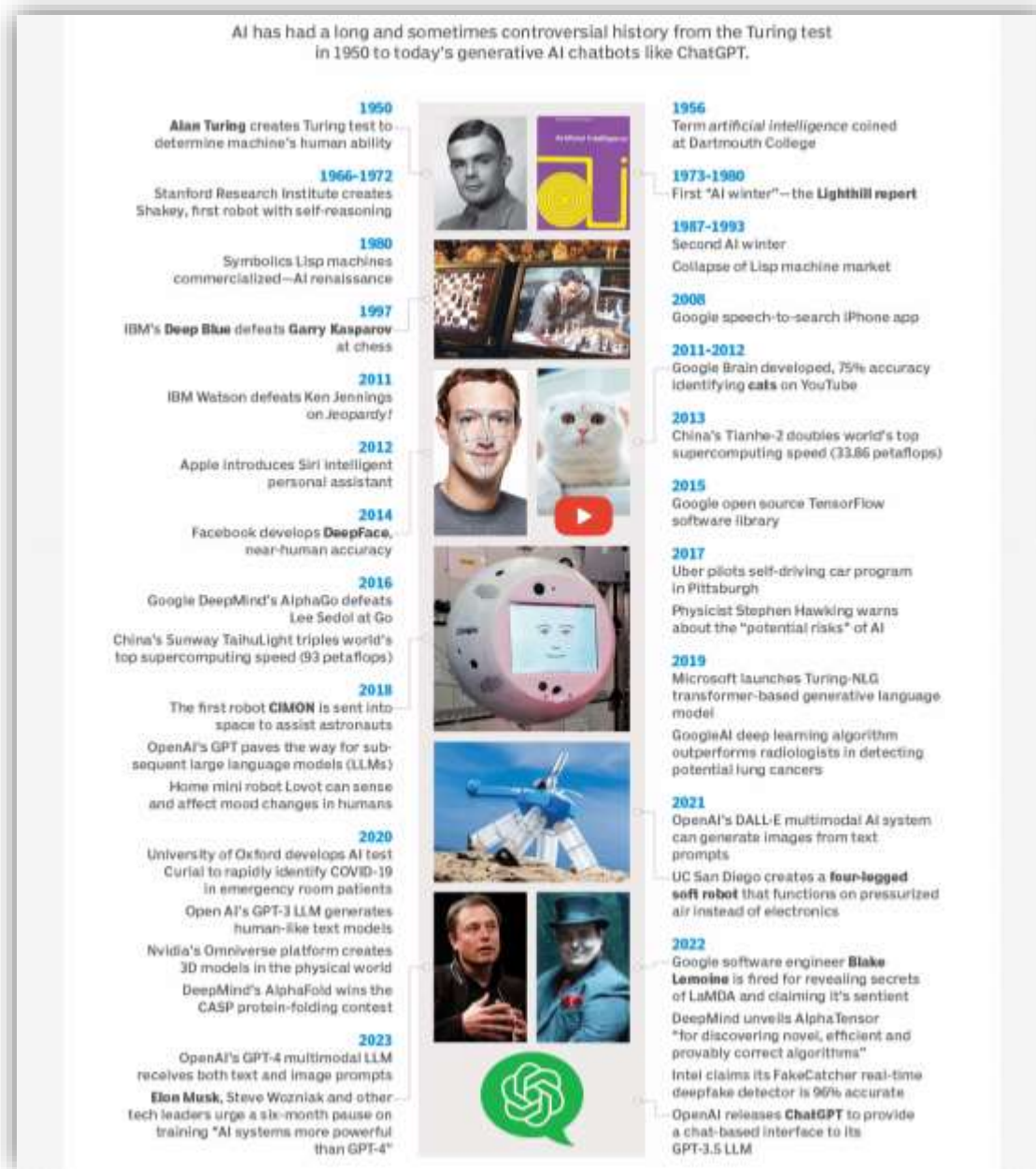
- Good at detail-oriented jobs. AI has proven to be as good or better than doctors at diagnosing certain cancers, including breast cancer and melanoma.
- Reduced time for data-heavy tasks. AI is widely used in data-heavy industries, including banking and securities, pharma and insurance, to reduce the time it takes to analyze big data sets. Financial services, for example, routinely use AI to process loan applications and detect fraud.
- Saves labor and increases productivity. An example here is the use of warehouse automation, which grew during the pandemic and is expected to increase with the integration of AI and machine learning.
- Delivers consistent results. The best AI translation tools deliver high levels of consistency, offering even small businesses the ability to reach customers in their native language.
- Can improve customer satisfaction through personalization. AI can personalize content, messaging, ads, recommendations and websites to individual customers.
- AI-powered virtual agents are always available. AI programs do not need to sleep or take breaks, providing 24/7 service.

Disadvantages of AI

- Expensive.
- Requires deep technical expertise.
- Limited supply of qualified workers to build AI tools.
- Reflects the biases of its training data, at scale.
- Lack of ability to generalize from one task to another.
- Eliminates human jobs, increasing unemployment rates.

Evolution of AI

AI has had a long and sometimes controversial history from the Turing test in 1950 to today's generative AI chatbots like ChatGPT



Importance of AI in child and women protection

- Artificial Intelligence (AI) has emerged as a powerful tool in various domains, and one area where its importance cannot be overstated is in child and women protection. AI technologies can play a significant role in identifying, preventing, and addressing issues related to the safety, well-being, and rights of children and women.
- Early Detection of Abuse: AI algorithms can analyze vast amounts of data, including social media posts, online chats, and other digital content, to identify potential signs of abuse or exploitation. By using natural language processing and machine learning techniques, AI systems can flag concerning language patterns, images, or behavior, enabling early intervention and support for victims.
- Improved Online Safety: Children and women are particularly vulnerable to online harassment, cyberbullying, and grooming. AI-powered tools can help identify and filter harmful content, detect malicious online activities, and provide real-time alerts to parents, guardians, or relevant authorities. These technologies help create safer digital environments for individuals, minimizing the risks associated with online interactions.

Importance of AI in child and women protection

- *Enhanced Law Enforcement*: AI can assist law enforcement agencies in **investigating cases of child trafficking, abduction, and violence against women**. Facial recognition algorithms, for instance, can aid in identifying missing children or tracking down perpetrators by comparing images from surveillance cameras with databases of known offenders. This technology can significantly speed up investigations and potentially save lives.
- *Predictive Analysis and Risk Assessment*: AI can **analyze patterns and trends in data to predict potential risks and vulnerabilities**. By leveraging machine learning algorithms, it is possible to **identify high-risk situations or individuals more accurately**. This proactive approach allows child protection agencies and support services to allocate resources effectively and target preventive measures where they are most needed.
- *Supportive Therapy and Counseling*: AI-based chatbots and virtual assistants can provide accessible and confidential support to children and women who have experienced trauma or abuse. These conversational agents **can offer information, guidance, and emotional assistance**, helping **victims feel heard and supported**. AI-driven therapy tools can complement traditional counseling services and bridge the gap in access to mental health support.

Importance of AI in child and women protection

- *Data Analysis for Policy Formulation*: AI algorithms can process large datasets related to child and women protection, including demographics, case histories, and intervention outcomes. By analyzing this information, policymakers can gain valuable insights to develop evidence-based strategies and policies that address the root causes of abuse and prioritize the well-being of children and women.
- *Privacy Protection*: Implementing AI solutions in child and women protection must prioritize privacy and data security. It is crucial to design systems that adhere to strict privacy regulations and protect the identities of individuals involved. Balancing the benefits of AI with privacy concerns ensures that the technology is used responsibly and ethically to safeguard the rights of children and women.

Role of Artificial Intelligence in Child and Women Protection

- *How AI can assist in early detection and prevention of abuse*
- Artificial Intelligence (AI) has the potential to revolutionize various aspects of society, and one area where it can make a significant impact is in the **early detection and prevention of abuse**. By leveraging advanced algorithms, machine learning techniques, and vast amounts of data, AI systems can help **identify signs of abuse across different domains**, such as **child abuse, domestic violence, online harassment**, and more. This sub-topic explores how AI can be utilized to enhance early detection and prevention efforts, ultimately contributing to the **protection and well-being of vulnerable individuals**.

Role of Artificial Intelligence in Child and Women Protection

- *How AI can assist in early detection and prevention of abuse*
- *Detecting Patterns and Anomalies:*

AI algorithms can analyze large volumes of data to identify patterns and anomalies that may indicate the presence of abuse. For instance, in the context of child abuse, AI can analyze social media posts, online chats, or electronic communication records to identify keywords, sentiments, or behavioral patterns that raise red flags. By comparing this information with known indicators of abuse, AI systems can provide early warnings to relevant authorities or support organizations.
- *Enhancing Surveillance and Monitoring:*

AI-powered surveillance systems can be employed to monitor public spaces, such as schools, hospitals, or public transportation hubs, for signs of abuse. These systems can use facial recognition technology to identify individuals who may be associated with past instances of abuse or have been reported as potential abusers. By combining real-time video analysis with existing databases, AI can help prevent further harm by alerting security personnel or law enforcement to intervene promptly.

Role of Artificial Intelligence in Child and Women Protection

- *How AI can assist in early detection and prevention of abuse*
- *Developing Predictive Models:*

AI can be trained on **historical data to develop predictive models that can forecast the likelihood of abuse in certain situations or individuals**. By analyzing factors such as demographics, socio-economic indicators, and behavioral patterns, these models can provide insights into the risk of abuse and enable targeted prevention strategies. For instance, AI can help identify families or individuals who may be at higher risk of domestic violence and allow social services to allocate resources more effectively.
- *Analyzing Digital Content and Social Media:*

With the exponential growth of digital platforms, AI can assist in **monitoring online spaces for abusive content and interactions**. Natural Language Processing (NLP) algorithms can scan social media posts, comments, and messages to detect hate speech, cyberbullying, grooming, or other forms of online abuse. AI systems can analyze language patterns, context, and user behavior to identify high-risk situations and promptly report them to appropriate authorities or online platforms for intervention

Role of Artificial Intelligence in Child and Women Protection

- *How AI can assist in early detection and prevention of abuse*
- *Supporting Mental Health Assessment:*

Abuse often leaves lasting psychological effects on survivors. AI can assist in detecting signs of mental distress or suffering by analyzing language, voice, and facial expressions. Chatbots or virtual assistants equipped with AI algorithms can interact with individuals, providing a safe and confidential environment for them to express their concerns. By monitoring the user's emotional state, AI systems can identify potential cases of abuse and connect individuals with appropriate mental health resources or support networks.

AI-based tools for identifying signs of abuse and violence

- AI-based tools for identifying signs of abuse and violence have emerged as valuable resources in addressing and preventing such harmful situations. By leveraging advanced algorithms and machine learning techniques, these tools can analyze various forms of digital content, including text, images, and videos, to detect patterns and indicators of abuse or violence. Here is some information about AI-based tools in this context:
- Text analysis: AI tools can analyze written text, such as social media posts, chat logs, or email conversations, to identify explicit or implicit signs of abuse. These tools can detect keywords, phrases, and linguistic patterns that may indicate harassment, threats, or other forms of violence. Sentiment analysis and contextual understanding play a crucial role in interpreting the meaning behind the words.

AI-based tools for identifying signs of abuse and violence

- Image and video analysis: AI algorithms can analyze visual content, including images and videos, to detect signs of physical abuse, self-harm, or violence. Computer vision techniques enable these tools to identify injuries, weapons, or aggressive behavior in visual media. They can also recognize facial expressions or body language that may indicate distress or danger.
- Social network analysis: AI tools can analyze social network data to identify patterns of abuse or violence within relationships or communities. By examining the connections, interactions, and behavioral data of individuals, these tools can flag suspicious activities, identify potential victims, and highlight perpetrators who exhibit abusive behavior online.

AI-based tools for identifying signs of abuse and violence

- *Early warning systems*: AI-based tools can serve as **early warning systems by continuously monitoring digital platforms for signs of abuse or violence**. Through real-time analysis and alerts, these tools can help authorities and support organizations intervene **promptly to prevent further harm**. They can be integrated into existing reporting mechanisms or used as standalone solutions.
- *Privacy and ethical considerations*: While AI-based tools for identifying abuse and violence offer significant potential, it is **crucial to address privacy and ethical concerns**. Safeguarding user data, ensuring transparent and accountable algorithms, and avoiding biases in the training data are essential aspects to consider during the development and deployment of these tools.

AI-based tools for identifying signs of abuse and violence

- *Collaborative approach*: AI-based tools should be seen as **complementary to human efforts rather than a complete replacement**. Combining the power of AI with human expertise, such as social workers, psychologists, and law enforcement professionals, can lead to more accurate and effective identification of abuse and violence. *Collaboration ensures a holistic approach to addressing the complex nature of these issues.*

What is GPT?

- Generative Pre-trained Transformers, commonly known as GPT, are a family of neural network models that uses the transformer architecture and is a key advancement in artificial intelligence (AI) powering generative AI applications such as ChatGPT.
- Responsible AI, AI is the practice of designing, developing, and deploying AI with good intention to empower employees and businesses,
 - Minimize unintended bias
 - Ensure AI transparency
 - Create opportunities for users
 - Protect the privacy and security of data

Challenges and Considerations:

- While AI offers significant potential for risk assessment and prediction, several challenges must be considered:
- *Data Quality and Bias*: AI models heavily rely on high-quality data. **Inaccurate or biased data can lead to faulty predictions and inaccurate risk assessments.** Ensuring data quality and addressing biases are critical for reliable risk assessment.
- *Ethical and Legal Implications*: The use of AI in risk assessment raises ethical and legal concerns, such as **privacy, fairness, and transparency.** Organizations must carefully navigate these issues and ensure that AI systems comply with relevant regulations and guidelines.

Challenges and Considerations:

- *Interpretability and Explainability*: AI models, particularly deep learning algorithms, are often considered black boxes due to their complex inner workings. **Interpreting and explaining AI predictions is crucial, especially in domains where transparency is essential, such as finance and healthcare.**
- *Overreliance and Human Expertise*: While AI systems can augment human decision-making, it is crucial to **avoid overreliance on AI predictions alone**. Human expertise and judgment are still vital in assessing risks and making informed decisions.
- *Other Limitations*: AI-based tools are not infallible and have certain limitations. They **heavily rely on the quality and diversity of the training data**, and they may struggle with detecting indirect forms of abuse or recognizing cultural nuances. Human involvement and oversight remain crucial in validating and interpreting the results generated by these tools.



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