A SYSTEMATIC REVIEW OF CONTEMPORARY AI TOOLS

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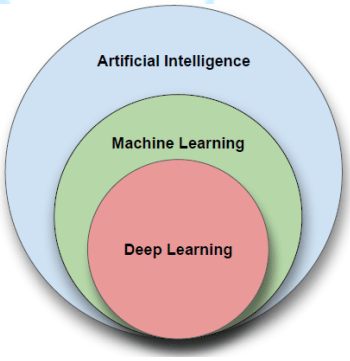
ABSTRACT

The rapid evolution of artificial intelligence (AI) has led to the proliferation of diverse tools and platforms designed to support tasks ranging from data preprocessing and model development to deployment and monitoring. This systematic review examines contemporary AI tools across key domains including machine learning, natural language processing, computer vision, and reinforcement learning. By analyzing over 50 widely adopted frameworks and platforms—such as TensorFlow, PyTorch, Scikit-learn, Hugging Face, and OpenAI APIs—this paper evaluates their capabilities, usability, scalability, and integration features. The review also explores open-source versus commercial offerings, cloud-based versus on-premise solutions, and the extent of community support and documentation. Through comparative analysis and benchmarking insights, we identify strengths, limitations, and emerging trends that inform tool selection for researchers, developers, and organizations. The findings aim to guide stakeholders in navigating the complex AI ecosystem and making informed decisions aligned with their technical and strategic goals.

Keywords: Artificial Intelligence, Machine learning, Natural Language Processing.

INTRODUCTION



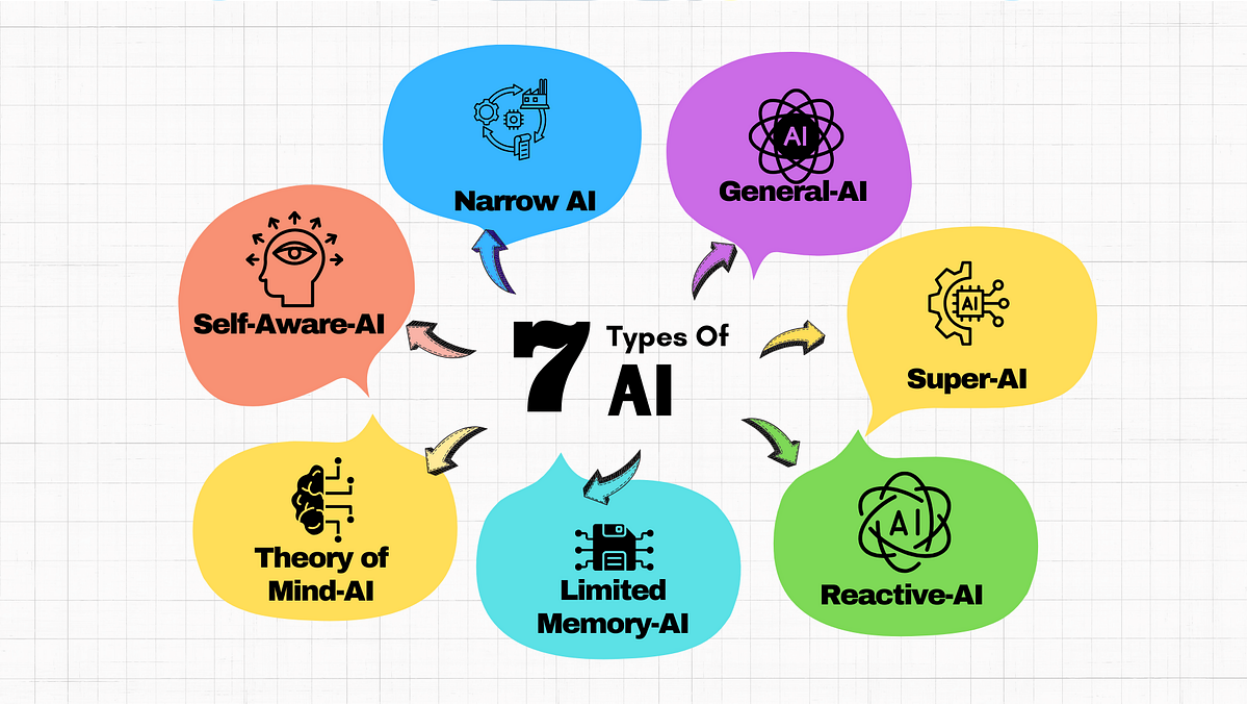
AI tools and frameworks are foundational technologies driving innovation. They are central to today's digital transformation across many industries, revolutionizing daily technology interactions. Healthcare, tech giants, startups, education, and even finance are finding these tools essential in their day-to-day running of operations. AI tools use machine learning and other techniques to simulate human intelligence, performing tasks like data analysis, content creation, and pattern recognition. These tools can automate repetitive jobs, provide insights from large datasets, and enable new capabilities like self-driving cars or personalized recommendations. Popular examples include large language models like ChatGPT and AI video generators, which learn from data to generate new text and media.

ARTIFICIAL INTELLIGENCE

AI, or artificial intelligence, is a technology that enables computer systems to perform tasks that typically require human intelligence, such as learning, problem-solving, and decision-making. It

allows machines to process data, recognize patterns, understand language, and make predictions or decisions, often without being explicitly programmed for every specific task. AI powers many everyday applications, including virtual assistants, search engines, and recommendation systems. There are 7 different types of AI. They are as follows

- Reactive machines
- Limited memory
- Theory of mind
- Self-awareness
- Narrow
- General
- Super



AI BY FUNCTIONALITY

Reactive Machines: The most basic type of AI. It reacts to current input and cannot form memories or use past experiences to inform future decisions. An example is Deep Blue, IBM's chess-playing supercomputer.

Limited Memory: This AI can look into the past to make better decisions. Current AI systems like self-driving cars and virtual assistants fall into this category, using recent past data to make predictions.

Theory of Mind: This is a more advanced, future type of AI that would be able to understand human emotions, thoughts, beliefs, and intentions.

Self-Aware: The most advanced and hypothetical type of AI. It would possess consciousness, emotions, and self-awareness, making it capable of understanding its own internal state.

TYPES OF AI BY CAPABILITY

Artificial Narrow Intelligence (ANI): Also known as "weak" AI, this type is designed to perform a specific, narrow task, such as voice assistants, chatbots, or image recognition software.

Artificial General Intelligence (AGI): Also known as "strong" AI, this is a hypothetical form of AI that would have the ability to understand, learn, and apply knowledge across a wide range of tasks, just like a human.

Artificial Superintelligence (ASI): A theoretical stage of AI where its capabilities would surpass human intelligence in virtually every field. AI Tools used most frequently are

- ChatGPT
- Perplexity AI
- Microsoft Copilot
- Google Gemini
- Claude
- Amazon Alexa
- Beautiful.AI
- Analytics

CHATGPT

The purpose of ChatGPT is to be a versatile AI assistant for generating human-like text and performing a wide range of tasks, from answering questions and writing code to creative endeavors like composing music and stories. It serves as a tool for both personal and professional use, helping users be more productive by summarizing information, providing insights, assisting with language translations, and even assisting with data analysis.

- Answering questions and providing information
- Content creation
- Coding assistance
- Creative and ideation support
- Productivity and organization
- Data analysis

Advantages of ChatGPT:

Increased efficiency and productivity, versatile content creation, and enhanced learning experiences. It streamlines tasks like writing and summarizing, acts as a creative partner for content generation, and serves as a personalized learning tool by providing explanations and answering

questions in a conversational and interactive manner. Its natural language understanding also makes it effective for communication, research, and customer support.

Disadvantages of ChatGPT:

Its tendency to produce inaccurate or biased information, lack of true emotional intelligence, and potential for misuse in spreading misinformation or creating harmful content. Other drawbacks are privacy concerns regarding user data, the risk of over-reliance on technology, and the potential for plagiarism and academic dishonesty. ChatGPT also lacks creativity and true understanding, can generate content without proper citation, and its outputs are only as good as the data it was trained on.

PERPLEXITY AI

The purpose of Perplexity AI is to serve as an AI-powered search engine and research assistant that provides direct, conversational answers with citations from live web sources. It aims to revolutionize the traditional search experience by summarizing information and eliminating the need to sift through multiple links, offering users more precise and efficient ways to find information. It is used for everything from general fact-finding and research to complex analysis and content creation.

Advantages of Perplexity

Perplexity AI's advantages include its ability to provide accurate, up-to-date answers with clear source citations, superior contextual understanding, and a conversational research experience that saves time and effort. It excels at summarizing complex information and is a versatile tool for academic research, content creation, and professional tasks, with features like file uploads and data organization to enhance its utility.

Disadvantages of Perplexity

Disadvantages of Perplexity AI include potential for inaccuracies, data privacy concerns, and a high cost, especially for professional use. Other limitations are a dependency on internet connectivity, potential issues with context and user experience due to frequent UI changes, and security vulnerabilities in its Android app.

MICROSOFT COPILOT

The purpose of Microsoft Copilot is to serve as an AI assistant that boosts productivity, creativity, and efficiency by providing intelligent suggestions and automating repetitive tasks across various platforms. It helps users with a wide range of activities, including writing and summarizing documents, generating code, creating images, and providing quick answers to questions.

Advantages of Microsoft Copilot

Microsoft Copilot enhances productivity by assisting with tasks like drafting content, analyzing data, and summarizing information within Microsoft 365 apps. Key benefits include improved efficiency in daily work through AI-powered automation, better data insights, and faster communication and project management. It also streamlines creative processes and allows for easier collaboration.

Disadvantages of Microsoft Copilot

Disadvantages of Microsoft Copilot include potential costs, data privacy concerns, security vulnerabilities like prompt injection, accuracy issues and hallucinations, and over-reliance that can diminish user skills. It also has limitations in functionality, performance inconsistencies, and compatibility with all Microsoft applications and file types.

GOOGLE GEMINI

Gemini is used for a variety of tasks, including acting as an AI assistant for writing and research, integrating with Google apps like Gmail and Maps to perform actions like summarizing emails or finding directions, and helping with creative work like generating images or brainstorming ideas. It can also help with daily tasks such as setting alarms, and its deeper features allow for complex data analysis and building custom "Gems" or expert bots for specific functions.

Advantages of Gemini

Google Gemini's advantages include its deep integration with the Google ecosystem, multimodel capabilities (handling text, images, audio, and video), and its advanced reasoning and real-time information access. It offers enhanced productivity through features like task automation, code generation, and customizable agents, with strong performance and scalability thanks to Google's infrastructure.

Disadvantages of Gemini

- Potential for Hallucinations and Inaccurate Outputs.
- Subscription Cost for Advanced Features.
- Privacy and Data Security Concerns When Uploading Sensitive Data.
- Limited Third-Party Integrations Beyond Google Services.
- Latency and Performance Variability Under Heavy Loads.

DEEPSEEK

DeepSeek AI is used for a range of tasks, from general chatbot applications to specialized, reasoning-intensive functions like coding and problem-solving. It is used as a search and data analysis tool, an AI assistant capable of answering questions and writing programs, and a platform for developers via its API. Additionally, its models are being integrated into other products for industries like healthcare and finance

Advantages of Deepseek

DeepSeek is good for tasks that require advanced reasoning, such as complex problem-solving, technical accuracy, and code generation. Its strengths lie in its efficient, modular

architecture and training methods, which allow it to handle complex tasks with high accuracy while using fewer resources than some competitors. DeepSeek is also popular for its open-source accessibility, which enables users to run it locally on their own computers.

Disadvantages of Deepseek

Disadvantages of DeepSeek include potential data privacy and security risks due to its Chinese origin and data hosting, limited multi-modal capabilities, high resource demand, and potential for bias or censorship. Other drawbacks include requiring advanced technical expertise, high implementation costs, and potential limitations in areas like general knowledge or creative writing.

DIFFERENCE BETWEEN DIFFERENT AI PLATFORMS

Feature	ChatGPT	Microsoft Copilot	Gemini
Model	GPT – 3.5	GPT-4	GPT-4
User Base	100M+	NA	NA
Controversies	Yes	No	No
Interface	User-friendly	Precise	NA
Accuracy	Variable	High	Improving
Responsiveness	Moderate	Moderate	Fast
Availability	Free	Paid	NA

DeepSeek vs. ChatGPT vs. Google Gemini vs GitHub Copilot

Parameter	DeepSeek	ChatGPT	Google Gemini	Github Copilot
Accuracy	Best for domain-specific tasks	Strong general-purpose text	Real-time data access	High contextual accuracy for coding
Scalability	Industry-specific, specialized	Flexible across industries	Best for research and data-driven tasks	Focused on software development
Cost	Tailored for businesses	Subscription-based (Free & Pro)	Partially free, premium features	Subscription-based for developers
Ease of Use	Enterprise-level integration	Web-based and API-friendly	Seamless Google Workspace integration	Direct IDE integration
Key Applications	Healthcare, Finance, Legal	Content creation, education, customer support	Research, multimodal tasks, collaboration	Coding, education, rapid prototyping
Platforms Integrated	Custom enterprise platforms, API	Web, APIs, Plugins,	Google workspace, Google cloud, APIs	VC Code, JetBrains, Github, APIs

CONCLUSION

This systematic review highlights the dynamic and rapidly evolving landscape of contemporary AI tools, underscoring their diverse capabilities, design philosophies, and application domains. From open-source frameworks like TensorFlow and PyTorch to commercial platforms offering end-to-end solutions, the AI ecosystem presents a rich array of options tailored to varying technical needs and organizational goals. Our comparative analysis reveals that while many tools excel in specific areas—such as scalability, ease of use, or community support—no single solution universally outperforms others across all dimensions. Therefore, selecting the appropriate AI tool requires careful consideration of project requirements, resource constraints, and long-term integration strategies. As AI continues to permeate industries and research disciplines, future developments will likely focus on improving interoperability, ethical transparency, and automation of complex workflows. This review serves as a foundational guide for practitioners, researchers, and decision-makers seeking to navigate the AI tool landscape with clarity and confidence.

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