AICERTs™

AI+ Everyone™

White Paper

AI+ Everyone – An AI CERTs Initiative

As per venture capitalist Kai-Fu Lee, chairman and chief executive of Sinovation Ventures, claimed that AI would have bigger impact on humankind than the impacts of all of humanity's previous technology revolutions combined. This includes electricity and the internet. [1]

Stephen Hawking was more forthright when he said "The rise of powerful AI will be either the best or the worst thing ever to happen to humanity. We do not yet know which [2]."

You do not need a computer science degree to operate a computer or be a business graduate to start a business. Similarly, you do not need to be an expert in AI to understand and use AI. In fact, many of you are already doing it, albeit unknowingly. This paper is for people who like to learn about AI and its impact on their lives but do not have a degree in mathematics, statistics, or machine learning. However, a small part of the paper at the end is addressed to jobseekers and professionals.

1. Executive summary

The arrival of ChatGPT from OpenAI took the world by storm and settled the debate on the arrival of AI. Now the debate is on "how much" AI. The AI by ChatGPT is called generative AI or GenAI for short. Generative AI is an exciting and growing field of artificial intelligence that can revolutionize content creation, analysis, communication, and knowledge processing. It can create text, images, audio, and video quickly. In fact, it can create works of arts, programming, music, and many more artefacts that require human intelligence. This technology has brought a sea change in our interactions with social media.

Gaper and many other research houses have pointed out that AI will replace 30% to 50% of jobs by sooner than 2030 [3]. On the other hand, its impact is going to be on a great scale, unimaginable for now. Alternatively, a large number of jobs will disappear and will be replaced by newer work. Does it point to an uncertain future? It does for sure. Hence, it is imperative that we understand AI and understand it well.

Copyright© 2024. All rights reserved

Can everyone understand AI? This is a question the answer to depends on individuals, not in terms of capability, but willingness to learn. If you want to build an AI or ML systems for companies or to pursue your programming instinct, then you will have to master complex statistics and mathematics. However, general understanding of AI requires common sense and a curious mind. Simplified explanation of AI adds its own value too. In this paper, we have tried to explain AI for common understanding.

We have covered why you should know and understand AI. We have also explained machine learning (ML), which plays a major part in the uses of AI that you experience in your daily lives. We all have experienced recommendation system of Amazon & Netflix, airline ticket booking by MakeMyTrip, spam email categorization by google, disease detection by hospitals, and pre-approved loan notification by banks. All of them use machine learning techniques.

While the content of this paper is targeted to the general populace, this will be equally useful for jobseekers, professionals, and AI leaders because it provides essence of what AI is.

2. Introduction

AI has touched many parts of our lives and is going to influence our future. As per a study by Gartner, it predicts that 80% of people will interact with smart robots daily by 2030. The current volume is less than 10% [4].

Starting from home to work, AI is going to impact in a significant way. Knowledge about AI is important for the following reasons:

- AI is changing the job market and marketable skills. AI will certainly replace many jobs hitherto done by humans, but it will also create new opportunities. Understanding the AI trend can help prepare for new opportunities.
- AI is used to make decisions about our choices and lifestyles in a significant way. This has already started impacting our lives and this will only increase in future. Understanding AI can help you make informed decisions about your own life.
- Starting with education to climate control, AI is being used to find solution to some of the biggest problems that we have been facing since decades. Pharma, finance, logistics, and many other areas are integrating AI into their operations. Understanding AI can help in contributing to solve these problems.
- AI agents now do many human interfaces. The use of AI agent is only going to increase in future. Understating AI will help make our interactions fruitful and conclusive.

Copyright© 2024. All rights reserved

- Ethics AI is a recent phenomenon that is arising out of widespread use. These ethical questions will change the way AI interacts with humans. Understanding AI can enable you make informed, ethical decisions.
- Additionally, understanding AI can also be personally beneficial as this will help us understand the world and its events much better.

Do You Use AI?

When you translate a language into other language using google translate or any other application, you are using AI. When you start typing your search item and google tries to guess it and shows you possible options, the AI is in action.

When you shop for books in Amazon and you receive recommendation from the vendor, you just got an AI agent recommending similar books. When you watch movies in Netflix, the system recommends you other movies to watch, you just received an AI agent's recommendation based on your choices in the past.

The recommendation may not be of your liking, but this is what the AI agent can infer from the limited data it has about you. When you go to office and the doors open automatically because the system recognizes your face, you just used an AI agent for authentication.

So, what is the fuss about it? You are already using it, and you did not really think it is so revolutionary that everyone should know about it.

Right question... read on.

There are innumerable ways in which artificial intelligence has penetrated our lives.
At the end of this paper, you will know the prevalence of AI in our lives and have some ideas about the most used algorithm and models that have become part of our experience.

The paper offers a comprehensive exploration of Artificial Intelligence (AI). This includes its fundamentals, development, and applications. The readers will achieve foundational understanding of AI after going through it.

Copyright© 2024. All rights reserved

3. Problem Statement

According to research done by World Economic Forum [5], AI was projected to displace 85 million jobs over the past five years while creating 97 million new jobs. This disruption will have tremendous impact on society, with people affected by this will need Government support.

While human interaction with AI has been increasing rapidly, people still find the concept of AI intimidating to a large extent. However, this should not be the case. Making AI driven application may be difficult but understanding AI should be possible. This paper is an effort to make AI intelligible for everyone.

But first, why does AI seem difficult to understand?

AI is Full of Technical Jargon:

The terminologies that dominate the narratives of AI are often technical in nature. Neural networks, machine learning, deep learning, algorithms, learning models, and big data are some of the terms that relate to AI. These terms can be confusing for most people.

AI seems like a "Black Box" Phenomenon:

Uses of AI agents and models in processes such as recommendation, pre-approved loans, eligibility for extra discount etc. do seem like coming out of black box. There does not seem to be transparency from customers' perspective. This apparent lack of transparency makes people suspicious about AI.

The Change in AI is Rapid:

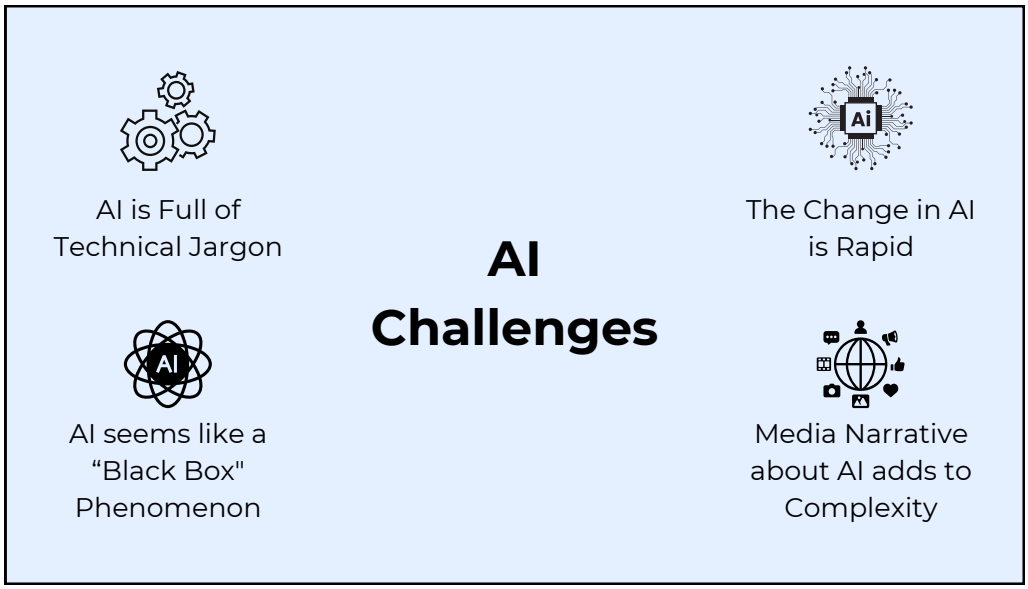
Technology is changing too fast for people's comfort. It takes time for people to trust the new technology which AI brings along with it. Keeping up with these changes can be overwhelming.

Media Narrative about AI adds to Complexity:

Media coverage often talks about AI replacing humans in big number and other such dreadful scenarios. Moreover, they often sensationalize the news related to AI. This is a big hindrance to realistic understanding and evaluation of AI.

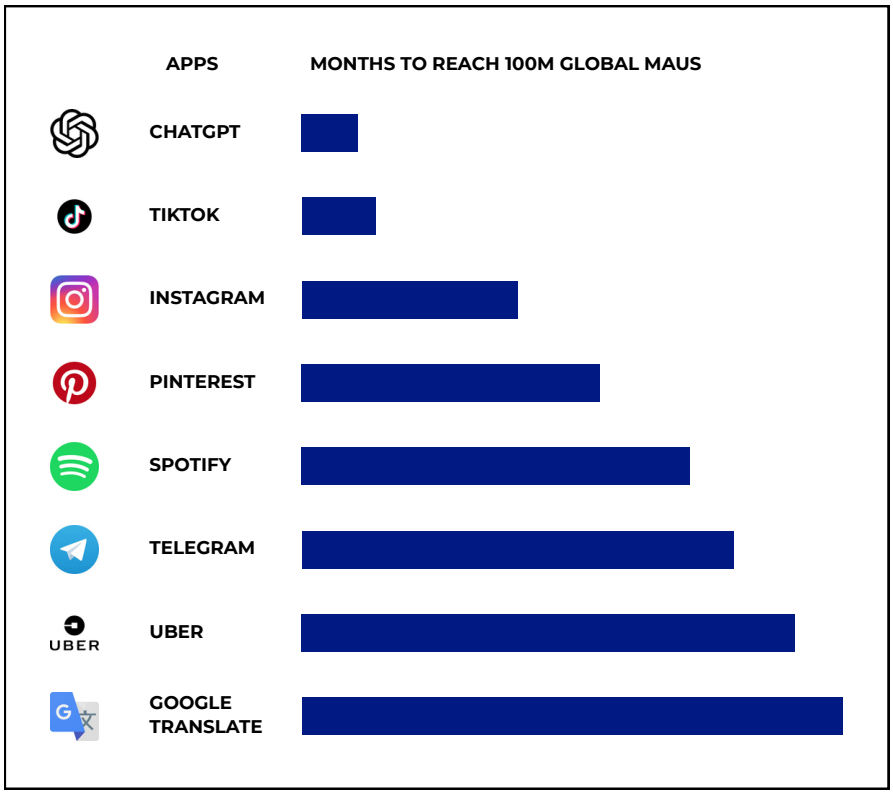
Additionally, finding easy and lucid explanation of AI concepts can be challenging. These challenges erect barriers in understating the impact of AI, which is crucial for informed decision making.

Copyright© 2024. All rights reserved



4. Artificial Intelligence – A primer for everyone

It took Instagram 30 months to reach 100 million users. It took TikTok 9 months to achieve the same user base. It took only 2 months for ChatGPT to reach the same number [6]. The next innovation can easily involve all of us in weeks. There is no choice but to be part of the AI revolution and to understand it.



Copyright© 2024. All rights reserved

Let us explain Artificial intelligence (AI) in simple terms. The idea behind AI is a machine or computer that can act like human, at least in learning and thinking. It is not just about following instructions, but about understanding, adapting, and making decisions. Here are the key points of an artificial intelligence system.

Data is vital for AI, the Better

AI systems use massive amount of data to recognize patterns, trends, relationship, and category. They learn from data and use that knowledge to deal with new data.

Example: AI system uses vast amount of data and parameters to detect diseases in patients. Based on past data it identifies a pattern which results into patient having disease. It learns to identify diseases based on the data.

Data Helps in Prediction

Now that the machine has learnt from the vast amount of data, it can make predictions or take decisions.

Example: When a new patient comes for diagnosis, the machine matches his or her data with the pattern and gives result accordingly.

Continuous Improvement Refines Prediction Capabilities

The prediction may not be entirely accurate. The accuracy level may be 80% or 90% or any other number. However, as AI system works on more data, it keeps refining and improving its capabilities. The accuracy, as a result, increases.

Example: The percentage of patients in which AI system is predicting on disease correctly may be 80%. As the system works with more data, accuracy percentage will rise.

More examples of AI in Action:

ChatGPT: It responds to your prompt. ChatGPT is a very sophisticated GenAI tool that can draft essays, answer questions, create context, build your resume, summarize texts, translate into different languages, and do many things that were forties of humans till a few months ago.

Self-driving Cars: They are recent AI robots that navigate the route, avoid obstacles, and travel from one point to another.

Virtual assistants: Virtual assistants like Siri and Alexa use AI to understand your questions and answer appropriately.

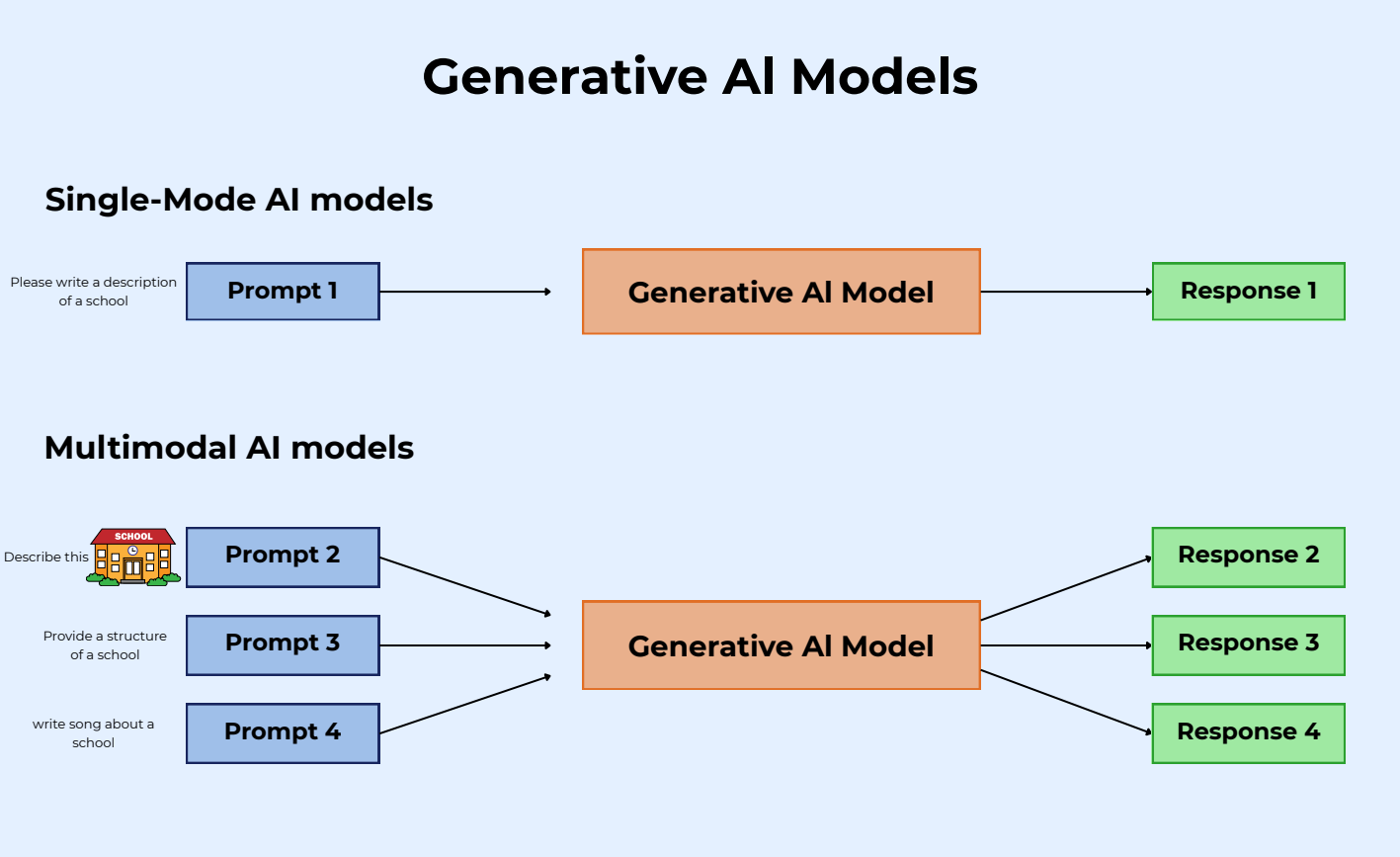
Personalized recommendations: From movies to music, AI helps us discover new things we might like and enjoy.

Copyright© 2024. All rights reserved

A Brief Note on GenAI

GenAI means generative artificial intelligence. In simple terms, it means that the system or computer can generate new images, texts, audios, or videos. ChatGPT is one such example of GenAI. There are two types of generative AI models.

The first type consists of single-mode models which receive the same type of input as the output. For example, when we give prompt in text and the answer is expected in text. The second type is multimodal AI models where the input and output type can be different. For example, we input the prompt describing a scene and the machine gives output in the form of an image resembling what the prompt described.



There are various algorithms and applications such as NLP, DALL.E, ChatGPT, and many more available for carrying out the tasks.

Copyright© 2024. All rights reserved

A Brief Note on GenAI

For a significant part, AI uses what is known as machine learning. The term “Machine learning” is intimidating for common people. So, let us decipher the term.
ML is a subset of AI, though these acronyms are used interchangeably many times. ML can be described as a technique to use programming & data and apply the resulting model to new data to get an insight. Machine learns, just like humans, in the following ways.

Supervised Learning:

This is like a mentor who gives you a set of similar questions and correct answers. Repeating this multiple times with a vast set of questions teaches the machine how to answer similar but new questions. It learns by comparing its own guesses to the correct answers and adjusting its approach to factor in new information.
From technical perspective, it has a set of information. Based on that information, it finds some new information. This new information is called output or dependent variable and the information on which the output depends is called input or independent variables. Here are a few examples.

- The machine can find out what would be the amount of sugar produced in a year given the monsoon forecast. Monsoon forecast in input and the amount of sugar is output. The amount of sugar can take any numerical value. When the output is a numerical value, this process is called regression.
- The second type of problem is where your output is a category or a class. This is called classification.

For example, the machine will find if a person suffers from a disease or not based on multiple parameters such as heartrate, blood pressure, skin color, and few more parameters that doctors study. The machine tells you by going through the data and gives the answer is yes or no. Yes and No are two categories but there can be more than 2 categories also. There can be Yes, No, and “further investigation needed”.

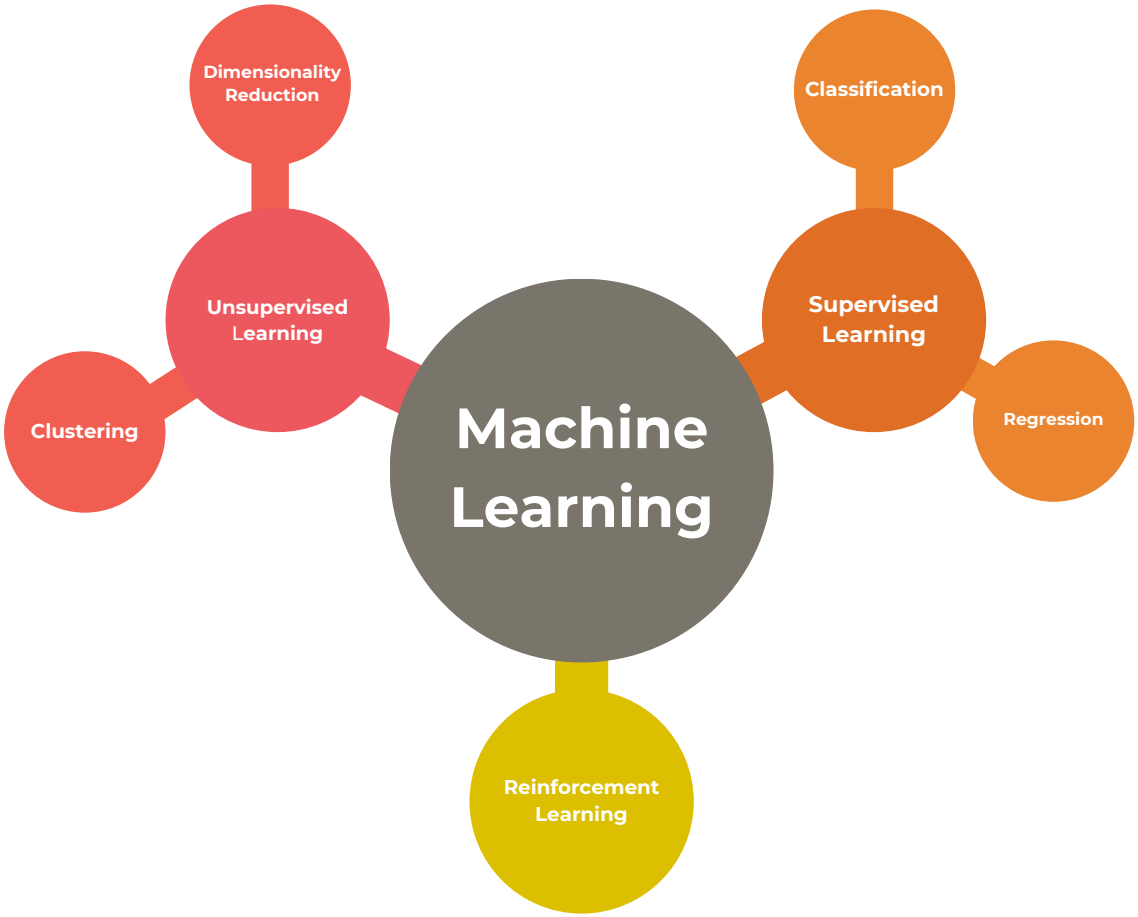
- In both types of problems, the machine knows the label of the output. Hence this is called labeled data. The machine learning under labeled data is known as supervised learning.

Examples of supervised leaning are spam email detection, pre-approved loans, weather forecast etc.

Copyright© 2024. All rights reserved

There are few techniques such as decision tree, logistic regression, support vector machine and few more to do classification.

For regression, the technique is also called regression.



Unsupervised Learning:

Unsupervised learning is exploring the data to find patterns and structure. Based on the patterns and structure, it divides the data into different groups, also known as clusters. This method under unsupervised learning is called clustering.

- These clusters are defined based on similar characteristics. Since these clusters do not have label, they are called unlabeled data. Unsupervised learning works with unlabeled data.
- Examples are customer segmentation based on purchase behavior.

There are a few techniques to do clustering. These are hierarchy based, density based, and partitioning based techniques.

Copyright© 2024. All rights reserved

Reinforcement Learning:

In this form of learning, the machine or computer learns by trial and error. It gets reward for good action and punishment for bad ones. Reinforcement learning learns by mistakes and keeps refining itself.
It has 5 important components:

- Agent – For example, self-driven car
- Environment – For example, road and surrounding
- State – the current state of the agent
- Action – the act committed by the agent
- Feedback – This can be reward or punishment based on the action by the agent.

Examples are video games, robotics etc.

5. Impact of AI on your Life

As the saying goes, you may not be interested in AI, but AI is interested in you. So, the impact of AI is going to be huge. It has already penetrated many parts of our lives. The impact will be more comprehensible in future. Here are some of the areas where AI is impacting our lives.

- Entertainment and lifestyle
- Education and learning
- Security and policing
- Financial investments and habits
- Work and spending

These are direct ways in which AI impacts our lives. There are many indirect ways which are subtle in nature. The impact of AI on your thoughts in terms of political leaning, world affairs, climate change, and many other important issues is immense. There is also danger that AI driven content can manipulate your thoughts both ways.

What Could Happen in Future?

The future, as they say, is not what it used to be. There is completely unknown aspect of AI of which we are not sure. But here is a list of impact of AI.

- Thoughts driven machine
- Quick long distance transportation
- Virtualization of work
- Robot in daily lives
- Man versus Machine – May sound bizarre at this point.

Copyright© 2024. All rights reserved

How AI is impacting different personas?

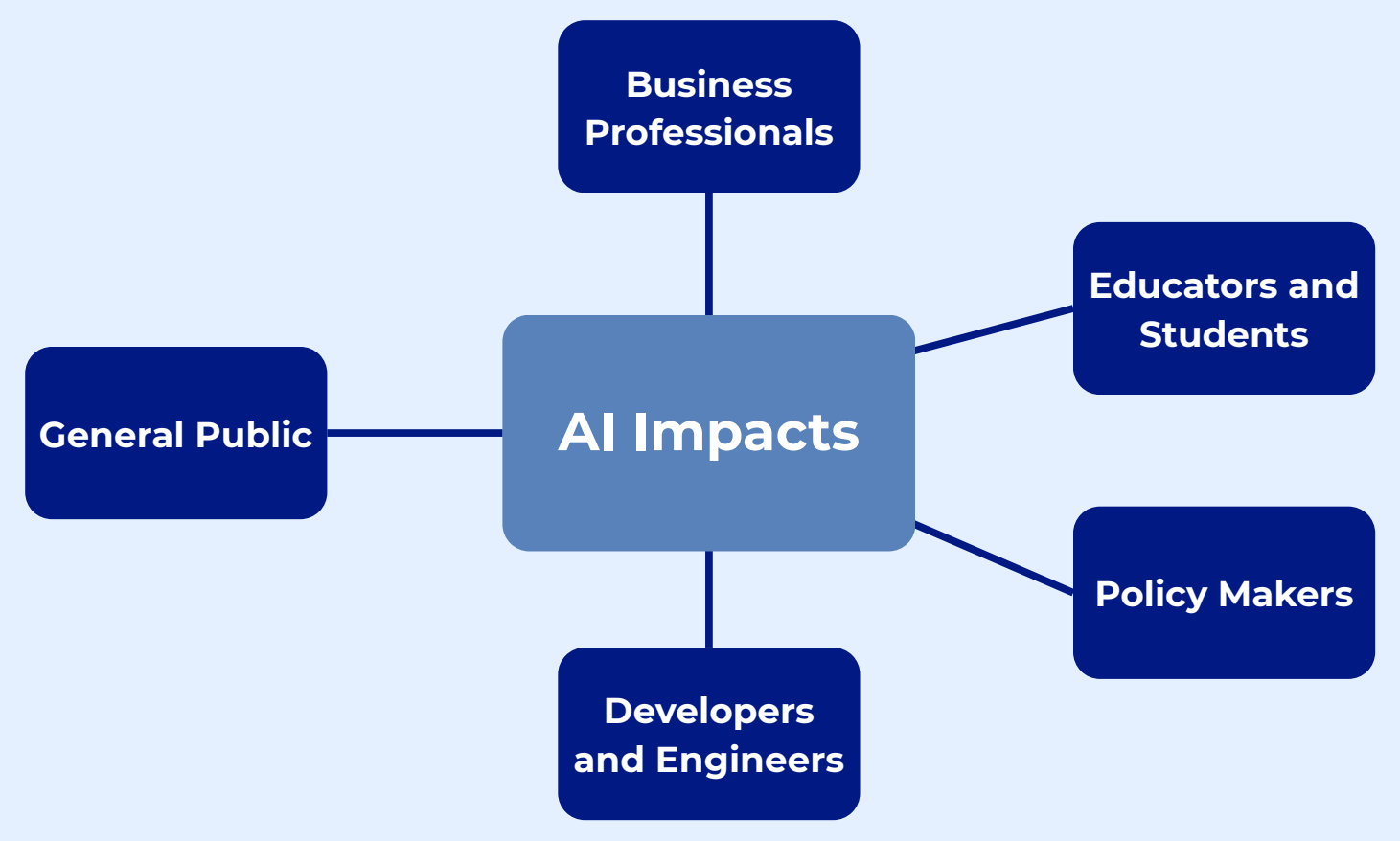
General Public:
For general public, the uses of AI varies as per requirements and understanding. Many use it for getting answers from the GenAI tools such as ChatGPT. The second most used feature of AI is comparing prices for various products and services such as books, electronic goods, airline tickets, hotels, restaurants, and tour packages.
Then there are AI enthusiasts who use AI for creative purposes such as making art, stories, and stock market trading. In many cases, they are the ones that make AI or any technology widespread.

Business Professionals:
They use AI mostly for their work. Finding answers to some of their work related questions, summarizing key points from long functional documents, getting synthetic data from AI for experiments and testing, and researching on their business problems such as customer segmentation, product pricing, supply chain, and customer relations. The use of AI in business application is big.

Educators and Students:
AI has played a big role in revolutionizing education. Adaptive assessments, mind map, performance insights, and personalized teaching are some of the ways it has added immense value to the education sector.
Teachers use it for assessments and tailoring their courses for individual classes and group of students. At the same time, AI allows them fine granularity with which they design their courses. On higher education, AI has played transformative role in research and development. It is now much easier to get the exact content and analysis using AI tools. Students use it for research, solving assessments, and learning about complex topics. While there have been cases of misuse such as plagiarism but overall impact of AI on students' learning has been positive.

Developers and Engineers:
AI has been a blessing for developers. They use it for software development, testing, and experiments. Co-pilot, an AI tool that helps developers in coding, has found a big fan base in software engineers and designers. It has enabled developers to focus on the logic and algorithm than worry about syntax and formatting of code.
Moreover, AI is an effective tool for learning new languages and frameworks. It provides pseudo code which can be readily developed into a full-fledged code by incorporating individual company's standards and guidelines.

Copyright© 2024. All rights reserved



Policy Makers:

Policy makers are the ones that need to use it effectively. There have been some of the great usage of AI by them for social purpose. There are many ways policy makers can use the artificial intelligence to serve the population better.

For example, identifying the real need from the population, targeted subsidy, framing policies for specific population set, identifying lacunae on regulations and rules and correcting them, and getting insight on the impact of their monetary and fiscal policies on the larger population and accordingly change if needed.

Copyright© 2024. All rights reserved

6. How to prepare for the world driven by AI

Preparing for the AI driven world is no longer a matter of choice but a necessity. It involves a multi-faceted approach focusing on the developments of technology as well as studying its impacts. Here is a breakdown of important things that people should consider.

Continuous Learning is the Key:
The days when you studied in a stretch and joined a job without needing to learn any further (apart from job) is over. Continuous learning will keep you updated with the events in society. For professionals, continuous learning will ensure that your skills are always valued.

Acquire Right Skills:
AI technologies are changing rapidly. Keep updated with the changes and acquire right skills.

Learn Data Analysis and Interpretation:
You do not have to go deeper into statistics except when you are preparing for AI roles. However, learn basics about data types, AI tools, and typical applications of AI in our lives, big data, and cloud.

The following part is for professionals and job-seekers who want to get into AI roles.

Adapt to the Evolving Job Market:
Job market in technology and in AI is continuously evolving. The skills that you learnt yesterday are no longer relevant. So, reskilling and upskilling are the keys to remain relevant in today's job market. Be prepared to adapt yourself for new roles and responsibilities. Pursue certification, formal courses, and short term courses.

Explore AI-related Career Paths:
AI offers a gamut of career options. Look at the roles in various streams related to AI. There are roles in AI development, data science, machine learning, GenAI, and domain specific AI roles.

Be Comfortable with Data Analysis:
Go through statistical concepts. Statistics is the backbone of AI. Now AI has gone beyond statistics, but a solid foundation of statistics will help you differentiate yourself from the crowd.

Copyright© 2024. All rights reserved

7. Common uses of AI in daily lives

Let us consider few of the examples that people encounter in daily lives and discuss briefly how AI agents work.

Recommendation of Books and Movies:
They work on similarity of items or users or past data of users. Similar items has similar characteristics. So, when someone likes an item, similar items are recommended.
In the case of users, the system finds similar users based on the characteristics. So, if a user has seen a specific movie and the system finds out that another user who has many characteristics in common, then the system will send the recommendation the other user. The third way is looking at the purchase history of user and recommend accordingly.

Spam Emails:
It works on the probability. The system designates few words as spam words and then checks the frequency of those words in the email. Then, it calculates the probability of the email being spam. If the probability is above a certain threshold, the system marks the email as spam.

Generative AI:
It works on LLM or large language models. The concept is little complex. So, let us try a watered down version of how it works. It consists of billions of words, data, and files which help the system understand the context and query. So, when you enter a prompt, the system finds the context and answers accordingly.

8. Conclusion

In conclusion, the goal of this paper is to explain AI in simple terms so that everyone gets to understand what AI is, how it impacts their lives, and how they can make sense of future driven by AI. While this paper works at the conceptual level, the leaders have to also address digital divide, equitable education for all, democratizing knowledge, and bridge societal inequalities in order to make AI .

By sharing the knowledge and advantages of AI, human potential can be unlocked, and the combination of AI and human intelligence can create the most prosperous society known to the world.

Copyright© 2024. All rights reserved

9. References

[1] Jason Ma, May 25, 2024, Top VC Kai-Fu Lee says his prediction that AI will displace 50% of jobs by 2027 is 'uncannily accurate', Fortune, https://fortune.com/2024/05/25/ai-job-displacement-forecast-50-percent-2027-kai-fu-lee-chatgpt-openai/

[2] Stevenson, M. (2015b, October 8). Answers to Stephen Hawking's AMA are Here! WIRED. https://web.archive.org/web/20230502051006/https://www.wired.com/brandlab/2015/10/stephen-hawkings-ama/

[3] Adams, S. (2024, October 1). 15 jobs will AI replace by 2030? Hire Remote Developers | Build Teams in 24 Hours - Gaper.io. https://gaper.io/15-jobs-will-ai-replace-by-2030/

[4] Press release, October 21, 2024, Gartner Identifies the Top 10 Strategic Technology Trends for 2025, Gartner, https://www.gartner.com/en/newsroom/press-releases/2024-10-21-gartner-identifies-the-top-10-strategic-technology-trends-for-2025

[5] Amanda Russo, 20 Oct 2020, Recession and Automation Changes Our Future of Work, But There are Jobs Coming, WEF, https://www.weforum.org/press/2020/10/recession-and-automation-changes-our-future-of-work-but-there-are-jobs-coming-report-says-52c5162fce/

[6] Garfinkle, A. (2023, February 2). ChatGPT is on track to surpass 100 million users faster than TikTok or Instagram: UBS. Yahoo Finance. https://finance.yahoo.com/news/chatgpt-on-track-to-surpass-100-million-users-faster-than-tiktok-or-instagram-ubs-214423357.html?guccounter=1&guce_referrer=aHR0cHM6Ly9jaGF0Z3B0LmNvbS8&guce_referrer_sig=AQAAANa-HMYmYUgGOBjqGvmdGPUoaWIkcOKxR-K3H4eUmPof4tStue2H1HjxP83xoTZb8cNPDJu4cnl4h7m2DhNBiKCX4vsfwlBwowS_UltgUUv4P3dHD1q6Pg3wdUon71gkWG5CdScA5McwFviTExx0KBm6O-xl6UCj8Q9EvzOYWBiV

Copyright© 2024. All rights reserved

AI CERTs™

www.aicerts.ai

Contact

252 West 37th St., Suite 1200W
New York, NY 10018