Rightfully called a disruptive technology, it won't be wrong to say AI is the 21st century's biggest new industry. Once what was only a concept in sci-fi movies, AI is not a make-belief technology anymore, it's here to stay. The best broader applications of artificial intelligence are processes like machine learning, neural networks, deep learning, and voice and speech recognition. A lot of small to medium-sized businesses, as well as tech giants across industries, has invested heavily in adopting AI to their benefit. In fact, if you remove AI from their business practices, their profitability would instantly collapse. This dependency sheds light on the fact that the growth of artificial intelligence technology is rapid and grand. A 2020 report from Grand View Research suggests that the AI industry will see a compounded annual growth rate of 42.2% between 2020 and  2027.

Three of the biggest tech giants making waves right now are Google, Amazon, and Microsoft who have their respective visions for artificial intelligence. In this article, we will compare their AI projects and products, and their market share to understand who is leading the AI race.

## Some important statistics before we start

- AI can increase productivity by 40%
- The number of AI startups increased 14 times in the last two decades
- Global GDP will increase by $15.7 trillion by 2030, thanks to artificial intelligence
- AI-powered chatbots are estimated to reduce business coast by $8 billion by 2022
- The number of AI-powered voice assistants is expected to reach 8 billion by 2023
- About 77% of the devices we already use have at least one form of AI

These statistics speak loud about how AI is leading us into the future with the market expected to grow at a CAGR of 36.62% till 2025. Currently, the race to develop the best AI tools is one of the highlights of the tech world, from the battle between web browsers to fighting terminal illnesses. Here's how Google, Microsoft, and Amazon are using artificial intelligence to create better products and services.

## Google

AI is embedded in Google's core. The company has successfully moved from a mobile-first world to an AI-first world. Right from Google's search engines, Google Maps, Google Photos, to YouTube and Gmail Smart Reply, AI is integrated inside all of the Google apps we use on a daily basis. Google is driving AI through its technological offerings like TensorFlow and Cloud AutoML (to name a few) that is helping developers and SMB's innovate by using its open-source projects. Their lab, Google AI, is conducting research that advances the technologies by applying AI to products, new domains, and developing tools to ensure everyone can access AI. Google's mission is to collect and organize information from all over the world and make it universally accessible and useful, and AI is making it all happen.

"We want to use AI to augment the abilities of people, to enable us to accomplish more, and to allow us to spend more time on our creative endeavors", says Jeff Dean, Google Senior Fellow.

## *AI Products and Projects*

1. One of the many areas of artificial intelligence, deep learning, is an integral part of Google services to provide useful recommendations on YouTube. Google Brain, the AI-based technology at the foundation of YouTube monitors and records users ' viewing habits as they use the app to stream content. Deep neural networks analyze everything about the users viewing habits and preferences to personalize their feeds in a way that they will be addicted to the app and the ad money keeps rolling in making the company profitable.

2. Google's RankBrain contributes to 95% of Google's revenue from ads on its search engines. Thanks to artificial intelligence, its underlying technology, RankBrain is the third most significant factor in Google's search engine ranking algorithm along with content and links.

3. Google's Cloud Video Intelligence segments and analyses all the videos stored on Google for context and content to generate video summaries automatically and alerts when the system notices suspicious activities.

4. Google's parent company, Alphabet, owns Jigsaw which is another AI project to detoxify the internet. This tool identifies hate speech and toxic comments by assigning a toxicity score to a content section based on multiple parameters. It has been successful in protecting political campaigns and websites against DDoS.

5. Google plans to reshape the $3 trillion healthcare industry in the US by using AI for disease detection, diagnosis, and treatment. This comes on the lines of Google's machine learning program being able to detect breast cancer with 89% accuracy compared to pathologists who could do it with 73% accuracy. EY reported that Alphabet filed about 186 patents between 2013 and 2013 pertaining to the healthcare industry and its AI companies Deep Mind and Verily Life Science.

## Amazon

Amazon is a trillion-dollar company, thanks to artificial intelligence. It's one of the first companies to provide collaborative filtering-based personalized recommendations of the products on the domains. Amazon's investment in machine learning and AI efforts helped the company ace customer service.

## AI products

1. "Anticipatory shipping" is amazon's patented feature that allows products to reach your nearest possible location before you actually place the order to purchase the product. This forecasting is powered by AI which is also the underlying technology for its Prime Now service that facilitates one-hour deliveries. Amazon calculates the number of drivers required to make deliveries using an app called Flex that depends on AI. The app considers many factors like the number of packages in the same locality, the weight of the package, etc to make every minute count.

2. Amazon also uses an Ai-powered dynamic pricing algorithm to get an edge over competitors. The algorithm uses AI to enable optimal sales and revenue automatically by decreasing the prices of the products to increase sales when it's needed and vice-versa.

3. Amazon's AI-backed recommendation engines generate 35% of the total revenues. This algorithm uses data from customer's previous purchases, preferences, browsing history, search history to create a list of personalized products that a customer will likely buy.

4. The company's AI-powered sampling strategy uses infrastructure and product purchase data to identify products that each customer is likely to buy. The company then sends samples of new products to customers that chosen by machine learning models. This has been implemented on Prime subscribers.

5. Amazon's check-out free physical stores have AI cameras and sensors that charge a customer automatically when they walk out of the store with the product using the Amazon Go App.

6. Alexa is also powered by AI and has helped many companies add value to their customer service.

## *Microsoft*

Microsoft has launched many AI solutions across industries like healthcare, retail, education, banking, etc. One of the oldest contenders, here is Microsoft's AI products and plans.

1. Microsoft uses AI to fight against cybercriminals by learning from the data of every company that uses its services. The company's Azure security team customizes security to a client's online behavior. By this, they were successful at bringing its false-positive rate down from 2.8% to 0.001% by tracking down fake logins.

2. With its AI initiative project Hanover, Microsoft is bringing a change to the healthcare industry by helping to find the best cancer treatment. A group of researchers have created algorithms to understand how cancer develops and predict the best drug combinations to fight it.

3. Maritime ships transport 90% of goods across the sea which produces at least 3% of the global carbon emissions. As many companies don't know how much fuel the ships actually consume, Microsoft's AI solutions help in determining fuel efficiency with frequent data on climate and vessel speed to reduce fuel charges.

5. With an aim to help farmers, Microsoft partnered with ICRISAT to AI in increasing the crop yields by 10 to 30% by predicting the best sowing date for crops.

6. Carlsberg, a leading beer and beverages company, uses Microsoft's AI solutions to detect various aromas and flavors of beer, and also improve the quality of existing beers.

These are just summaries of what the companies are doing and what they have planned for in the future. While there are no clear winners, these three companies are far ahead of many companies when it comes to leveraging AI. While Google, Amazon, and Microsoft focus on providing tools and solutions for enterprises and their business model, Microsoft also has an eye on using AI for environmental purposes for a better future. It would be exciting to see how AI will be utilized in the future by these companies, with an aim to unleash the full potential of this disruptive technology.