Amazon Alexa Case Study

Case study of Amazon Alexa and its AI general overview. The start up, capabilities and usage of AI as virtual assistance to improve daily life.

Overview and Origins

Incorporated on November 6, 2014, as Amazon's cloud-based voice service. Alexa was inspired by the computer voice and conversational system on board the Starship Enterprise in science fiction TV series and movies such as Star Trek.

If you use wake up word “Alexa” and ask who’s your creator? You would get a response “I was invented by Amazon.” Although this is true, what isn’t revealed is that Rohit Prasad, an engineer from Ranchi, Jharkhand India along with colleague Toni Reid are credited with the creation of Alexa.

Rohit Prasad, an Illinois Tech graduate (M.S. Electrical Engineering ’99) credits Illinois Tech’s excellent faculty mentorship fostered his growth and helped him follow his passions. As a teenager and despite computers being new and not in abundance in his home country of India, Prasad expressed a deep interest in computers and science fiction. Bypassing games of cricket with other teenagers, Prasad would run home to watch Star Trek. "It was in the realm of science-fiction then, but I was endlessly fascinated by computers and humans communicating with each other." This would later serve as the main idea behind Alexa and its use of AI.

Alexa is funded directly through Amazon, although it is unclear how much of Amazon’s profits are directly allocated to continuously fund Alexa. Amazon launched The Alexa Fund in 2015, a $100 million venture capital fund targeting numerous types of developers and with a goal to make digital voice assistants more accessible and more powerful for its consumers.

BUSINESS ACTIVITIES

Alexa aims to seamlessly connect the general population as well as business and developmental consumers to cloud-based AI as a resource to enhance productivity and simplify daily lives.

Alexa reach in the consumer market targets individuals and households that show an interest in modern technology. With the use of voice controls, users are able to accomplish handsfree multitasking as well as power and operate smart home devices. 25% of all US households have some form of Alexa voice control devices. The largest percentage of users fall within the age range of 19-44 years of age with the higher portion being males.

Landscape

One of Alexa’s greatest features allows the AI to learn the sound of the individual account holder’s voice to personalize the Alexa experience. Furthermore, Alexa is able to use voice commands to order goods directly from the Amazon Prime account, giving Alexa a service and advantage over other voice control devices.

Alexa uses Voice AI with machine learning to enable the functions of the system as we know it today. But it goes a little bit deeper. Alexa embraces Conversational AI, a subset of Voice AI that focuses on creating more human-like and natural interactions with its users.

Alexa benefits from one of the biggest trends surrounding Voice AI such as voice recognition enabling more effective communication with the user and enhanced security measures. Other Voice AI technologies include voice cloning, text to speech and speech to text capabilities.

Voice recognition AI is a highly competitive field and hosts several opposing companies that use similar and even identical technologies for consumer and business applications. These include but are not limited to Apple Siri, Google Voice Assistant, and Microsoft Cortana among many others.

The use of voice command handsfree virtual assistant has made a tremendous impact on the current way of life. Additionally virtual assistant has also played a major role in the business sector as well. Businesses with Amazon account benefit from some the same products and services provided for the consumer market which increase productivity and offsets some cost.

Results

Although Alexa doesn’t measure its performance individually, the success/failure is measured by the performance of Amazon in annual revenue. Amazon has had tremendous success with a revenue of $590.740B in March 2024. Looking back to 2021 Amazon struggled to figure out a way to monetize the website (alexa.com) and it was announced that the site would close. Fortunately for Alexa the website was not directly related to the use of voice command, nor the app used to operate all devices in a central location.

Recommendations

Advising Amazon to further enhance voice recognition to aid in noticing the difference in change of the user’s voice. I believe this could aid in a medical emergency. For example, Alexa notices a difference in the voice, starts by asking if there is anything thing that the individual is or isn’t aware of. Perhaps Alexa notices slurred speech patterns from the user, diagnosing that this could potentially be a sign of a stroke and calls 911. Or maybe Alexa notices a different change and advises the user to seek medical attention and it is discovered the individual has a thyroid issue.

Machine Learning would be necessary to learn and understand differences in tone as they relate to an individual’s personal mood, time of day as well as physical feelings. This would require a more enhanced version of voice recognition and in turn improve Alexa moving forward.

ADDENDUM

<https://www.cnn.com/2018/10/16/tech/alexa-child-development/index.html>

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