Mara: The Rasa powered AI Assistant

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Summary

A simple primitive contextual Chat bot capable to take in voice input and give output in mostly voice, but also able to view data on the screen when needed. This AI assistant has the capability of extracting intent and entities from the user input bestowed by Rasa NLU framework, which is more natural than its predecessor Chabot assistants. An AI capable of understanding human language and extract data from a natural human input can be used in various places, but for demonstration Mara is given the ability to tell time, date, play movies, launch software installed in local machine, extract summary from Wikipedia, search and play videos from YouTube, do Google search or tell weather reports of a particular city. It is also designed to handle some dialogue management to make the interaction more natural.

# *Introduction:*

**What is AI or Artificial intelligence?**

**Artificial intelligence (AI)** is a wide-ranging branch of computer science concerned with building smart machines capable of performing tasks that typically require human intelligence. AI is an interdisciplinary science with multiple approaches, but advancements in [machine learning](https://builtin.com/machine-learning) and deep learning are creating a paradigm shift in virtually every sector of the tech industry.

Itis the simulation of human intelligence processes by machines, especially computer systems. Specific applications of AI include expert systems, natural language processing (NLP), speech recognition and machine vision.

AI technologies are categorized by their capacity to mimic human characteristics, the technology they use to do this, their real-world applications, and the theory of mind, which we’ll discuss in more depth below.

Using these characteristics for reference, all artificial intelligence systems - real and hypothetical - fall into one of three types:

1. **Artificial narrow intelligence** (ANI), which has a narrow range of abilities;
2. **Artificial general intelligence** (AGI), which is on par with human capabilities; or
3. **Artificial super-intelligence** (ASI), which is more capable than a human.

**Artificial Narrow Intelligence (ANI):**

Artificial narrow intelligence (ANI), also referred to as weak AI or narrow AI, is the only type of artificial intelligence we have successfully realized to date. Narrow AI is goal-oriented, designed to perform singular tasks - i.e. facial recognition, speech recognition/voice assistants, driving a car, or searching the internet - and is very intelligent at completing the specific task it is programmed to do.

Modules like Speech recognitions, Chatterbot, Text to speech Modules, Computer vision, are some of the well known AI in today’s date. All AIs in the present age are somewhere or the other are the derivative of these category of AI, namely, Google assistant, Siri , Alexa, Cortana and the list continues. They are designed to simulate the intelligence of humans using pre-collected, parsed data given to them, rather than generating the data themselves as humans do.

They are incapable of thinking or learning by themselves. They do not have ethics, or rules, or norms, because of which human interaction with these machines would feel more artificial, script driven, hard-coded rather than natural. One, on prolong exposure to the model would find repetitive nature of the model which would bring out the machine aspect of the AI.

Even though the bitter existence of these drawbacks of the ANI, These are the stepping stones to the next big thing in the Artificial Intelligence boom coming up in the near future. Modules like speech recognition or facial recognition, movement capture, are the building blocks of the next level AI.

**Artificial General Intelligence (AGI):**

Artificial general intelligence (AGI), also referred to as strong AI or deep AI, is the concept of a machine with general intelligence that mimics human intelligence and/or behaviors, with the ability to learn and apply its intelligence to solve any problem. AGI can think, understand, and act in a way that is indistinguishable from that of a human in any given situation.

This could be regarded as the next big thing in the Computer sciences. A machine which has the ability to mimic human intelligence with the added feature of learning from past experience and data are given to the model. These models will be conscious, with full cognitive abilities. They are not just efficient on doing singular tasks but also capable of putting the experimental knowledge to solve problems.

Strong AI would use theory of mind AI framework, which refers to the ability to discern needs, emotions, beliefs and thought processes of other intelligent entitles. Theory of mind level AI is not about replication or simulation. It’s about training machines to truly think and understand like humans.

AGI is a level the AI researchers have been struggling since long to achieve as this would need them to make machines conscious, and programming the set of all the cognitive skills, and implement many more aspects of humans to make them more natural.

**Artificial Super Intelligence (ASI):**

Artificial super intelligence (ASI), is the hypothetical AI that doesn’t just mimic or understand human intelligence and behavior ASI is where machines become self-aware and surpass the capacity of human intelligence and ability.ASI would theoretically be exceedingly better at everything we do, math, science, sports, art, medicine, hobbies, emotional relationships, everything. ASI would have a greater memory and a faster ability to process and analyze data

This has been the topic of various dystopian Hollywood sci-fi films and franchise such as The terminator, the Matrix portraying the AI taking over the world, enslaving humans. The concept of artificial super intelligence sees AI evolve to be so akin to human emotions and experiences, that it doesn’t just understand them, it evokes emotions, needs, beliefs and desires of its own.

The line between computer programs and AI is opaque. Mimicking narrow elements of human intelligence and behavior is relatively easy, but creating a machine version of human consciousness is a totally different story. While AI is still in its infancy, and the quest for strong AI was long thought to be science fiction, breakthroughs in machine and deep learning indicate that we may need to be more realistic about the possibility of achieving artificial general intelligence in our lifetime.

**Why chat bots can be the next level of AI?**

Chat bots have their origins in developers and programmers designing a model which could mimic as well as simulate human behavior. Although it has a conversation system may be in string or text, or its diverse algorithms to achieve the set goals, these programs have been created with purpose that aligns parallel to creating an intelligent system which in turn would feel more natural. They naturally have input and output port prebuilt into them so as data exchange can take place within the user and the machine. Added functionalities such as capability to trigger modules, functions, classes, just makes the model all together more capable.

Various kinds of chat bots have their own algorithms to map the output as per the inputs they receive. Chat bots are one of the first attempts of going for a diverse options approach rather than the traditional hard-coded approach ongoing in the programming and software community. It’s one way to mimic the human intelligence factors as we humans, make decisions on various situations ourselves to achieve our goals or objectives.

**What is Rasa?**

**Rasa** is a framework for developing **AI** powered, industrial grade chat bots. It's incredibly powerful, and is used by developers worldwide to **create** chat bots and contextual assistants. One does not need any machine learning or prior Chabot development experience. However, one should be familiar with Python programming. **Rasa** provides a framework for developing AI chat bots that uses natural language understanding (NLU). It also allows the user to train the model and add custom actions.