Language Model for Dialogue Applications

Why in News?

A senior engineer at **Google** claimed that the company's a**rtificial intelligence-based chatbot Language Model for Dialogue Applications (LaMDA) had become "sentient".**

What is LaMDA?

- **About:**
    - Google had first announced LaMDA at its flagship developer conference I/O (Input/Output) in 2021 as its **generative language model** for the dialogue applications which can assure that the application will be able to converse on any topic.
    - **LaMDA can engage in a free-flowing way about a seemingly endless number of topics,** an ability that the company thinks can unlock more natural ways of interacting with technology and the entirely new categories of helpful applications.
    - LaMDA can have a discussion on the basis of the user's inputs thanks completely to its language processing model which has been trained on large amounts of dialogue.
- **LaMDA 2.O:**
    - Google at I/O 2022 announced LaMDA 2.0 which will **further build on these capabilities.**
    - The new model **will possibly take an idea and generate imaginative and relevant descriptions, can stay on a particular topic even if a user strays off-topic,** and can also suggest a list of things that are needed for a specified activity.

What is the other language-based AI tool capable of?

- **Generative Pre-trained Transformer 3:**
    - An **autoregressive language model** that uses deep learning to produce human-like text.
    - In 2020, an article was published, claiming that **it was written entirely by an AI text generator known as Generative Pre-Trained Transformer 3 (GPT-3).**

What is a Chatbot?

- **About:**
    - Chatbots, **also called chatterbots, is a form of** Artificial Intelligence (AI) used in messaging apps.
    - This tool **helps add convenience for customers—they are automated programs that interact with customers like a human** would and cost little to nothing to engage with.
        - Key examples are chatbots used by **businesses in Facebook Messenger, or as**

- **virtual assistants, such as Amazon's Alexa.**
  - Chatbots tend to operate in one of two ways—either via **machine learning or with set guidelines.**
  - However, due to advancements in AI technology, chatbots **using set guidelines are becoming a historical footnote.**
- **Types:**
  - **Chatbot with Set Guidelines:**
    - It can **only respond to a set number of requests and vocabulary** and is only as intelligent **as its programming code.**
    - An example of **a limited bot is an automated banking bot that asks the caller some questions** to understand what the caller wants to do.
  - **Machine Learning Chatbot:**
    - A chatbot that **functions through machine learning has an** artificial neural network **inspired by the neural nodes of the human brain.**
    - The bot is **programmed to self-learn as it is introduced to new dialogues and words.**
    - In effect, as a chatbot receives new voice or textual dialogues, the number of inquiries that it can reply to and **the accuracy of each response it gives increases.**
      - Meta (as Facebook's parent company is now known) has a machine learning chatbot that creates a platform for companies to interact with their consumers through the Messenger application.
  - **Advantages:**
    - Chatbots are convenient for providing customer service and support 24 hours a day, 7 days a week.
    - They also free up phone lines and are far less expensive over the long run than hiring people to perform support.
    - Using AI and natural language processing, chatbots are becoming better at understanding what customers want and providing the help they need.
    - Companies also like chatbots because they can collect data about customer queries, response times, satisfaction, and so on.
  - **Disadvantages:**
    - Even with natural language processing, **they may not fully comprehend a customer's input** and may provide incoherent answers.
    - Many chatbots **are also limited in the scope of queries that they are able to respond to.**
    - Chatbots can be expensive to implement and maintain, especially if they must be customized and updated often.
    - The challenges of AI metamorphosing into sentient are far in the future; however, unethical AI perpetuating historical bias and echoing hate speech are the real dangers to watch for.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Q. With the present state of development, Artificial Intelligence can effectively do which of the following? (2020)

1. Bring down electricity consumption in industrial units
2. Create meaningful short stories and songs
3. Disease diagnosis
4. Text-to-Speech Conversion
5. Wireless transmission of electrical energy

Select the correct answer using the code given below:

(a) 1, 2, 3 and 5 only
(b) 1, 3 and 4 only
(c) 2, 4 and 5 only
(d) 1, 2, 3, 4 and 5

Ans: (b)

Q. Consider the following pairs: (2018)

	Terms sometimes seen in news	Context/Topic
1.	Belle II experiment	Artificial Intelligence
2.	Blockchain technology	Digital/Cryptocurrency
3.	CRISPR–Cas9	Particle Physics

Which of the pairs given above is/are correctly matched?

(a) 1 and 3 only
(b) 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

Ans: (b)

Exp:

- The **Belle II Experiment** is a particle physics experiment designed to study the properties of B mesons (heavy particles containing a bottom quark). Belle II is the successor to the Belle experiment, and is currently being commissioned at the SuperKEKB accelerator complex at KEK in Tsukuba, Ibaraki Prefecture, Japan. **Hence, pair 1 is not correctly matched.**
- CRISPR-Cas9 is related to genetic engineering. It is a unique technology that enables geneticists and medical researchers to edit parts of the genome by removing, adding or altering sections of the DNA sequence. **Hence, pair 3 is not correctly matched.**
- In simple terms, **blockchain** is a time-stamped series of immutable record of data that is managed by cluster of computers not owned by any single entity. Each of these blocks of data (i.e. block) are secured and bound to each other using cryptographic principles (i.e. chain). Blockchain technology allows market participants to keep track of digital currency transactions without central record keeping. **Hence, pair 2 is correctly matched.**
- Therefore, option (b) is the correct answer.

Source: IE