Humanoid robot tested

Part of: GS Prelims and GS III – Science and Technology

A series of trials were conducted on a humanoid robot at a government hospital in Jaipur.

Key takeaways:

- The trials were carried out to check if robot could be used for delivering medicines and food to the COVID-19 patients admitted there.
- If approved, the robot would help in keeping the doctors and nursing staff at a safe distance to protect them against the dreaded coronavirus.
- The medicos and paramedical staff are at higher risk of being infected with the virus despite wearing protective gear.
- It is battery-operated humanoid robot with a lifespan of four to five years.
- It uses artificial intelligence and Internet of Things (IoT).
- It can navigate its own way without the instructions to follow lines on the floor.
- The robots could also be easily disinfected and used multiple times inside the high-risk isolation ward.

Humanoid robot

- It is a robot with its body shape built to resemble the human body.
- The design may be for functional purposes.

More PICK Ups

1. Vyommitra, a half-humanoid is being developed by the Indian Space Research Organisation (ISRO) for an unmanned space mission later in 2020.

Who is Vyommitra?

- ISRO’s Vyommitra (vyoma = space, mitra = friend) is the prototype for a “half-humanoid”.
- She is also being called a half-humanoid since she will only have a head, two hands and a torso, and will not have lower limbs.
- She is under development at a robotics laboratory at the Vikram Sarabhai Space Centre.
- She will fly to space on an unmanned mission later this year, aiming to lay the ground for ISRO’s manned mission Gaganyaan in 2022.

What is a half-humanoid?

- A humanoid is basically a robot with the appearance of a human being.
- Like any robot, a humanoid’s functions are determined by the computer systems to which it is connected.
- With the growth of artificial intelligence and robotics, humanoids are being increasingly used for repetitive jobs.
- The artificial intelligence technologies are used in a humanoid to perform simple functions that include walking, moving things, communicating and obeying commands.

Why is ISRO developing a humanoid?
ISRO plans to send a human into space for the first time by 2022. It is racing against time to develop a crew module and rocket systems that will ensure the safe travel and return of the Indian astronaut. Other countries that have successfully launched humans into space did so after having used animals for conducting tests of their rockets and crew recovery systems. ISRO will use the humanoid to test the efficacy of its GSLV Mk III rocket to transport a human to space and back.

What are the tasks that Vyommitra will perform in space?

- The Vyommitra humanoid will test the ground for the human spaceflight.
- Once fully developed for the unmanned flight, she will be able to perform activities which will include,
  1. Procedures to use equipment on board the spacecraft’s crew module such as safety mechanisms and switches,
  2. Receiving and acting on commands sent from ground stations.
- The functions listed for the humanoid include attaining launch and orbital postures, responding to the environment, generating warnings, replacing CO2 canisters, monitoring the crew module, etc.
- Vyommitra will have lip movement synchronised to mimic speech.
- She can also double up as an artificial buddy to an astronaut - providing audio inputs on aspects like the health of the spacecraft during the launch, landing and orbital phases of the manned mission.
- She will report back to Earth on the changes occurring in the crew module during the spaceflight and return.
- This will enable ISRO to understand the safety levels required in the crew module that will eventually fly a human being.

2. FEDOR

1. It is carrying a life-size humanoid robot that will spend 10 days learning to assist astronauts on the International Space Station.
2. Known as FEDOR, which stands for Final Experimental Demonstration Object Research, the Skybot F-850 is the first humanoid robot to be sent to space by Russia.
3. The robot’s main purpose is to be used in operations that are especially dangerous for humans onboard spacecraft and in outer space.
4. FEDOR, who is the size of an adult and can emulate movements of the human body, has apparently embraced his mission, describing himself as “an assistant to the ISS crew”.

Significance:

1. Fedor copies human movements, a key skill that allows it to remotely help astronauts or even people on Earth to carry out tasks while the humans are strapped into an exoskeleton.
2. Fedor is described as potentially useful on Earth for working in high radiation environments, demining and tricky rescue missions.

PT SHOT: Fedor is not the first robot to go into space.
In 2011, NASA sent up Robonaut 2, a humanoid robot developed with General Motors that had a similar aim of working in high-risk environments.

In 2013, Japan sent up a small robot called Kirobo along with the ISS’s first Japanese space commander.

3. Recently an exhibition of art created by a humanoid AI robot, named Ai-da was held at University of Oxford.

- Aida is the world’s first ultra-realistic humanoid artist, able to draw creatively due to in-built artificial intelligence (AI) technology.
- Ai-Da is named after Ada Lovelace, the English mathematician and writer often called the world's first computer coder.
- In 2017, social robot Sophia was given citizenship of Saudi Arabia – the first robot to be given legal personhood anywhere in the world.

4. Sophia is a social humanoid robot developed by Hong Kong based company Hanson Robotics. Sophia was activated on February 14, 2016, and made her first public appearance at South by Southwest Festival (SXSW) in mid-March 2016 in Austin, Texas, United States. She is able to display more than 60 facial expressions.

Sophia has been covered by media around the globe and has participated in many high-profile interviews. In October 2017, Sophia became a Saudi Arabian citizen, the first robot to receive citizenship of any country. In November 2017, Sophia was named the United Nations Development Programme first ever Innovation Champion, and is the first non-human to be given any United Nation title.

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