

# Robotics in India

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**Source:** *The Hindu*

**Manifest pedagogy:** Robotics though mentioned in Indian Economic Survey 2017-18 as priority area but it has not drawn attention of any policy or plan. However, the works in private sector and few research institutions is laudable. Hence, it is important to know the government's efforts, impediments and the robots developed in India for the purpose of exam because Robotics is explicitly mentioned in syllabus.

**In news:** The **World's first humanoid robot Sophia** participated in the 81st edition of Technax, the annual tech festival of the Banaras Hindu University (BHU).

**Placing it in syllabus:** Robotics (explicitly mentioned)

## **Dimensions:**

- Robotics in India's policies
- Impediments
- Important private and public robots in India

## **Content:**

Sophia is the **first robot citizen of the world after Saudi Arabia granted her citizenship** in October 2017. She is a social humanoid robot, which using **artificial intelligence (AI) programming**, can imitate human gestures and facial expressions, and is able to converse on predefined topics.

It was developed by the Hong Kong-based Hanson Robotics and 'activated' on February 14, 2016. She **made her maiden India debut on December 30, 2017 at the Indian Institute of Technology, Bombay (IIT-B)** during its cultural festival TechFest.

## **Robotics in India's policies:**

**Chinese is the leader** in the robotic sales worldwide with a share of about 40% (as of 2019) according to the International Federation of Robots. **South Korea, Japan and U.S. are in second, third and fourth places** respectively.

**Indian IT and the Indian generic drugs industry** are the two areas where Indian companies have taken a march ahead of their Chinese counterparts.

**GreyOrange**, a company founded by a bunch of Indian techies in 2011 is **India's biggest robotic technology company**. They have **revolutionized supply chain automation**.

**Other Indian startup companies** in robotics are ASIMOV Robotics, I2U2 Robot and Sastra Robotics India etc..

Indian Economic Survey 2017-18 identified robotics as a focus area (along with blockchain, AI and other futuristic technologies). It was speculated that under **'Make in India 2.0'** robotics would find a special place.

A study released by industry association **ASSOCHAM states that 'Robotics are a settled necessity for taking Indian industry globally competitive** and the making country attractive for outside entrepreneurs for the "Make in India" drive.

Around 3,412 new industrial robots were installed in India in 2017 – an **increase of 30% over the 2,626 units that were installed in 2016**, according to International Federation of Robotics (IFR) report published in January, 2019. However India had hardly 3 robots for every 10,000 workers, according to IFR.

## **Impediments:**

- **Lack of hardware ecosystem** results in imports of most of the components overcoming challenges in dual-use certifications, high import duties (in some cases),

customs amongst other permission driven environments.

- **Financial incentives** – Any company which imports robots into India currently pays about 26.85% (7.5 Basic Customs duty plus 18% GST) tax. This is a serious impediment to mass adoption of robots.
- **Critical human resources-** According to the FICCI-TSMG Advanced Manufacturing Survey 2016, lack of quality human resources with necessary skills and expertise to work with advanced manufacturing technologies negatively impacts the ability to undertake cutting edge R&D in India.
- **Mindset shift required-** The industry faces political hurdles. In spite of the Government's focus on robotics lately, somewhere the notion that robots will destroy jobs in an already precarious job market is completely misplaced.

#### **Important private and public robots in India:**

- Thiruvananthapuram-based startup Genrobotics joined hands with the Kerala government to deploy a **spider-shaped robot named "Bandicoot"** to clean sewers and manholes in the city.
- Samsung is using around 80 **Epson robots** in its new manufacturing plant in Noida.
- ICICI Bank has deployed their robots in 14-15 locations across India where currency notes are sorted.
- Bangalore-based SME Suparna Plastics Ltd. which makes plastic ball valves is using **SCARA** (Selective Compliance Assembly Robot Arm) robots in its assembly operations for the high speed and accuracy it brings to the table.
- Robots are also being introduced in healthcare for operations that require greater precision. E.g. Ahmedabad-based Apex hospital used **Corpath technology of US-based Corindus Vascular Robotics** to remotely control a robot to perform a telerobotic heart surgery on a patient who was located 32km away in Gandhinagar in

December 2018.

- **Manav, India's first 3D-printed humanoid robot**, has an inbuilt vision and sound processing capability and is primarily meant for research purposes and is made available to research institutes which offer robotics as a subject of study.
- **Mitra**, the **first indigenously built humanoid robot** is capable of interacting with humans smartly. It was launched by Prime Minister Narendra Modi and Ivanka Trump, First Daughter and advisor to the President of the United States Donald Trump, at the Global Entrepreneurship Summit (GES) conference in 2018. It can be found floating in the corridors of the Canara Bank and PVR Cinemas in Bengaluru, chatting with the customers.
- **Robocop** – It is a police robot to assist in handling the law, order, and traffic management deployed in Hyderabad. It is designed to protect and secure places like offices, malls, airports, signal posts and other public spaces and can take care of security if deployed autonomously. It can diffuse bombs too.
- **KEMPA**- It is a special robot assistant built to suit the needs of the Kempegowda International Airport, which will answer queries of confused passengers in English as well as Kannada.
- **RADA** – It is a unique artificial intelligence-based robot developed by Vistara, a joint venture between Tata Sons and Singapore Airlines, to automate simple tasks and improve customer experience.
- **IRA** (Intelligent Robotic Assistant) is a shiny white interactive humanoid which would essentially help bank branch staff in servicing customers and was launched in Mumbai 2018.
- **INDRO**- This is reportedly the **tallest humanoid robot built in India**. It is an autonomous robot that was made inside a house with easily available low-cost material like aluminium, wood, cardboard, plastic etc. It can be

used for lightweight tasks like entertainment, education and a few household works.

- **DRDO's Daksh-** This made-in-India robot is primarily designed to detect and recover Improvised Explosive Devices (IEDs). It was inducted by Indian Army around 2011. Reportedly, 20 Daksh robots are already being used by the Indian Army. Using its X-ray vision, Daksh can identify a hazardous object and can diffuse it with a jet of water. It got an upgrade in 2015 and has been equipped with chemical, biological, radiological and nuclear hazard detection mechanisms.