

Episode 15

Smart Robot

Script: Dr. Manish Mohan Gore

Translation : Sukanya Datta

Concept and Co-ordination: Dr. B. K. Tyagi

Robots have introduced a measure of comfort and convenience to human lives. These machines are capable of carrying out all sorts of work. However, the only condition is that their software should be enabled by requisite commands. Sensors inserted in the robots help these to gauge light, sound, temperature, pressure and speed of the surroundings. These help the robots to carry out their tasks. Apart from sensors, the robots are also equipped with excellent processors. Additionally, you know that robotic memory is extraordinarily sharp. All these facts make robots appear intelligent. However, these machines are not blessed with natural intelligence although scientists install such software that these machines can simulate the way we carry out tasks. Since their brain is artificial in nature, the intelligence they possess is called artificial intelligence.

Robots can learn from experience and mistakes. These machines can adjust equally well to new conditions. This is also a reason why robots are called intelligent. Forget about the future, even today robots are being used to improve many aspects of our lives, society and environment. Robots are proving to be a boon in the fields of healthcare, agriculture and education. In this episode, we will focus on the importance of robots in our lives.

Characters

Sneha: (Interior designer. Woman. 35 years)

Pavan: (Engineer. Sneha's husband. 40 years)

Vedika: (Sneha and Pavan's daughter. 12 years)

Rakesh: (Banker. Pavan's elder brother. 50 years)

Malti: (Rakesh's wife. 45 years.)

Daivik: (Rakesh and Malti's son. 15 years)

Robot at the entrance (Not mentioned but is needed)

Music

Vedika: Mummy. Lockdown has been lifted. I saw on the News that flights and trains have become operational again. Can't we go somewhere now? How long are we going to stay imprisoned like this? (**Sad tone**)

Sneha: This step was taken to ensure our safety and security, Vedika. It also allowed us and the government to study the situation and take requisite measures to address it.

Vedika: (**serious tone**): Yes Mummy, what you say is correct. But all the bans have been lifted...can't we go on a vacation?

Sneha: I too feel like going somewhere. However, I feel that instead of going to some tourist-place we should visit your grandparents or your Uncle. It is close to a year that we have not met anyone. What is your opinion? How do you feel about the idea?

Vedika (**shrieking in excitement**): Uncle! Uncle's house.

Sneha: Well, let your Papa return from office. We can then talk about going to his brother's house.

Doorbell rings.

Vedika: (**Happily**) Papa is back. Papa is home.

Pavan: (**surprised tone**): What's the matter, Vedika? You look so happy!

Vedika: (**laughingly**): There is something special going on. Mummy will share it with you...but change first. Freshen up.

Sounds of tap flowing in the washroom. Sounds of someone freshening up.

Pavan: (**sipping tea**): So Sneha...tell me...what's up? What was Vedika referring to?

Sneha: Well, we are all bored after having been cooped up in the house for so long because of Covid restrictions. So, we were discussing about planning a trip to your elder brother's house in Ahmedabad. What do you say?

Says Rakesh but it should be **Pavan**: That's alright but would it be the right thing to do; to visit now?

Vedika: Papa please. Now we even have a vaccine for Corona. And we will follow all safety protocols. We will adopt Covid-appropriate behaviour. Please Papa...let's go. (**In tones of supplication**)

Pavan: Ok, Ok...I will call my elder brother and speak with him.

Sounds of a number being dialled on the mobile.

Rakesh: That is excellent news. Daivik was also misses all of you. So, when are you coming?

Pavan: Next week. Let me just check the availability of flight tickets.

Rakesh: OK. Once you book the tickets, let me know the date and time. Meanwhile let me share the good news with your bhabi (sister in law??) and Daivik.

Vedika: **(in happy tones):** How wonderful...we are going to Ahmedabad.

Pavan: Where is my laptop...I need to check ticket-availability.

Vedika hums to herself as she gets the laptop.

Pavan: There! That's done...tickets booked. Next week...the 15th to be exact...flight is at 2 O Clock. Are you two happy now?

Cars honking. Traffic noises. Sound of Aeroplane taking off.

Scene shifts to Rakesh's house in Ahmedabad

Doorbell rings.

Pavan: Namaste bhaiya...where are bhabhi and Daivik?

Rakesh: **(laughing):** Namaste, Namaste. They are here...both of them...in the next room. Come on in. Come in. How was the journey?

Vedika: **(humorously):** We suffered a lot during this journey. The three of us sat for two whole hours while wearing masks...and then, in the taxi too. It was tough. Really tough. Covid is really treating us harshly.

Rakesh: But child these are mandatory. Wearing a mask, maintaining 6 feet distance. Washing hands and face with soap and water **(laughs)**.

Daivik: Let it go, Papa. It has been an entire year of hearing these two words...Corona and Covid..I am going mad. Now Vedika is here. There are my friends Prince and Janvi who live in our colony...we will just play together now. Vedika, let us go to Kankariya Lake this evening. We'll have such fun.

Vedika: No Vaidik bhaiya (it should be Daivik bhaiya), we have been there thrice already...let's go somewhere else.

Daivik: **(rather sad tones):** Where else can we go? We have been to all other places multiple times.

Vedika: **(chirping up):** Haven't you heard of the robotic gallery? This unique gallery is in Ahmedabad's Gujarat Science Gallery. I have recently seen a video on YouTube about this place.

Daivik: (surprised tones): Ah! I remember now. My friend Sonu had mentioned it. I haven't been there...OK...we'll visit it.

Rakesh and Malti: (enthusiastically): So that's where we will go today. The robotic gallery. Let's have lunch and then we will set off.

Sounds of crockery and cutlery

Rakesh: (enthusiastically): Let's proceed towards our destination kids. Keep water bottles handy.

Daivik: OK Papa. We are ready.

Car starts

Robot Museum reached after a short while.

Vedika: (amazed tones): What a wonderful place. Look Daivik bhaiya...what a large robot.

Rakesh: This robot is about 25 feet tall. That's not all...look there is a track for battery-operated cars. It runs all around this museum...but let us enter.

Robot at the entrance of the museum welcomes everyone

Daivik: (surprised): Oh! Look there is a robot at the reception.

Vedika: Eh! It is providing information to everyone. How amazing!

Reception Robot: (in robotic voice): Good...afternoon...to...all ...of ...you. Welcome to the Robot Gallery. My fellow robot will be your guide and show you around the exhibits.

Robot Guide: (robotic voice): Good afternoon everyone. I have been programmed to give you a guided tour of the museum. I hope you will enjoy it. You may ask me questions about this robot-museum. So, are you all ready to commence the tour of the museum?

Rakesh, Malti, Pavan, Sneha, Vedika and Daivik: (all together): Yes.

Robot Guide: (robotic voice): So, let's go...first...you can see robot painters on one side of the gallery. On the other side you can see 3-D printers. You can have the robot painters paint your portrait and even have a 3-D printer make a statue of yours. We will meet here in half an hour to continue the tour.

Everyone gets a portrait painted and an idol made.

Vedika: We are back, Mr Robot-Guide...what will you show us next?

Sounds of robot scanning.

Robot Guide: (robotic voice): Sorry, but Mr Pavan is not back yet...unless everyone joins the group I cannot commence the next leg of the tour.

Everyone looks here and there.

Rakesh: (worried voice): Now where has Pavan gone...he was right here with me getting his 3-D image made.

Pavan arrives

Vedika: Oh Papa, where had you gone? We had not even noticed but our robot-guide told us that you had not rejoined the group.

Pavan: I had gone to the washroom...I thought there was some time left....

Robot Guide: (robotic voice): Shall we continue?

Everyone simultaneously: Of course.

Malti: (laughingly): Well, that's a good thing anyway...we do not have to keep an eye on the kids anymore... the robot will do it for us.

All laugh

Robot Guide: (robotic voice): We are in the Gallery of Robotic History. Here you will learn about the timeline of robots...its history...like for example which was the first robot...how did robots advance?

Daivik: (amazed): Yes...indeed...look...there are so many robots on display. Sports robots. Space robots. Rescue robots. Military robots. Micro nanobots. Agriculture and industrial robots....

Vedika: Really, this is an amazing world of robots.

Daivik: (laughingly): Vedika...Look at this...these robots are wrestling with one another.

Vedika: You go ahead and enjoy robotic-wrestling...I am going on to where they are playing tennis.

Pavan: (smilingly): Vedika. Daivik. Look!! Robot pets. The dogs and cats look so lifelike, don't they? But these are all robots.

Sounds of a robot moving. It holds the attention of the family.

Pavan: (astonished tones): What is that sound?

Rakesh: (laughingly): Look at that robot moving over stony ground...no wonder it is making such a noise.

Vedika: Papa, robots are intelligent...these can traverse any terrain; even uneven grounds.

Malti: Robots are very useful too. We can use these in times of emergencies also ...like for example when something or someone is lost. Robots are used in Search and Rescue operations.

Rakesh: **(laughingly):** Search and Rescue is correct...look over there.

Malti: **(amazed):** Oho...this robot is dancing and the other one is singing. This is amazing!

Sneha: Yes...the world of robots is unique and beyond compare. Let's go to the Indibot gallery where robots made in India are on display.

All (together): Yes...yes ...let's go to the Indibot Gallery.

Music to indicate change of scene

Sneha: **(in tones of great interest):** Mr Robot...we must have seen almost the entire gallery by now...what do you say?

Robot Guide: (robotic voice): Yes indeed Madam. We have completed the tour of the entire gallery.

Malti: **(pleased tone):** And I am ravenous too.

Robot Guide: (robotic voice): No problem Ma'am. Our last stop is Robot Cafe. You will get food cooked by Robot chefs which will be served by Robot waiters.

All (together): Wow, that's amazing. Everything is done by robots in this cafe...Robot chefs and robot waiters!

Robot Guide: (robotic voice): So, now you may place your order and enjoy a nice dinner.

Sounds of crockery and cutlery, Background hum of conversation.

Robot Guide: (robotic voice): I hope you enjoyed your visit to Robot gallery and the Robot Cafe. My job ends here. Thank you for coming here and giving me the opportunity to serve you.

All (together): Thank YOU. Thank you so much.

Family exits the museum

Car starts. Traffic noise.

Music to indicate change of scene.

Vediaka: I liked the Robot museum so much that I cannot stop thinking about it. I cannot help marvelling at how we created robots that can do things that we cannot do.

Daivaik: Very rightly said, Vedika. Robots help in the manufacturing of all those items that we use in our daily lives. It helps in economising on money and time; both.

Sneha: Yes indeed. And we cannot even think of doing all those repetitive and monotonous jobs that robots can do without getting tired or even without stopping to rest.

Daivik: Robots facilitate so many things in our lives and act to our advantage.

Pavan: It is a good thing that you are appreciating the importance of robots...but do you know that robots are revolutionizing the healthcare sector?

Vedika: Yes Papa, we did see some robots at the museum that are used in medical science.

Rakesh: But do you know that robots are used for surgery and as medicines as well? These are called micro robots or nanobots.

Daivik: **(enthusiastically):** I am hearing about nanobots for the first time...how are these used in medical science?

Rakesh: Just as we searched for the Robot museum and arrived at our destination, these nano robots too move around inside our bodies and reach their target. Now you must be wondering why these robots are inserted in human bodies, right?

Daivik and Vedika: (simultaneously): Yes.

Rakesh: For treatment. To deliver the medication to its target or to the diseased organ. Nano robots have been devised to do just this. Take for example, the Pill-cam. This uses a nano camera. Then there are dose-tracking pills and smart sensor capsules which are examples of smart pills that are used in treatment of medical conditions. Nano robots are used in the treatment of serious illnesses such as cancer.

Vedika: **(in tone tinged with amazement):** Aren't there any side effects when these nanobots are inserted into our bodies?

Rakesh: No, absolutely not. This is a clinically and medically safe method.

Daivik: Papa, You said nanobots are used in the treatment of cancer. How is it done?

Rakesh: Your Mom will provide the answer because her friend Swasti is a cancer-specialist who shares news of cutting-edge developments of cancer therapy with her. Isn't that so, Malti?

Malti: **(laughs):** Yes, you are right. I keep getting updates from Dr Swasti about cancer treatment and research breakthroughs. She told me that the inserted

nanobots track down special proteins expressed by cancerous cells. Then they release blood clotting enzymes that cut off the blood supply to the cancer cells. This way they stop the blood supply to cancer cells. As a result, the cancer cells die. Since only the cancer cells are targeted, healthy tissue is not damaged.

Vedika: Aunty, are nanobots used for surgery as well?

Malti: Yes Vedika. Some robots are designed in such a way that these can accompany the doctor into the operation theatre. These assist the surgeons during the operations. Micro robot injections are used in eye surgery. These are injected into human eyes. The doctors create a magnetic field in them to do the operation. And do you know, robots can be used to address issues of blockages in blood vessels.

Daivik and Vedika: Oh! Really...how is that done?

Malti: Nano bots are inserted into the body to clean the arteries and this procedure mitigates the risk of heart attacks.

Daivik: This sounds no less than a miracle. It is amazing how technology is benefitting us and helping us to remain healthy.

Vedika: Apart from healthcare sector, robots are being used in Industry too. Just a few days ago, Papa was saying their factory has acquired and installed some robots which have begun to work as well.

Pavan: Yes Vedika you are correct. Robots are being extensively used by different industries. Take my Manufacturing Industry for example, there were some tasks which resulted in accidents and injured some of our workers during their execution. As a result the workers refused to carry out those jobs. Then our CEO acquired some specially designed and programmed robots. These robots have taken over the dangerous jobs. The supervisor controls them remotely. Thanks to these robots my company is on a growth trajectory where production is concerned.

Rakesh: This is excellent news, Pavan. I remember reading somewhere that the use of robots in the Agricultural sector has led to an increase in productivity. Robots are being used to assist farmers at every step...right from sowing of seeds to harvesting the crops.

Sneha: **(laughing):** Robots are being used to help in housework too. Right from cleaning the drawing room or the swimming pool or even mowing the grass on the lawn.

Malti: Not just all this. Robots are helping in the care of the elderly too. Tasks that the robots help with include giving them their medications or meals on time. Robots are especially useful in the care of patients with Parkinsonism, Dementia and Alzheimer's ...a real boon in fact.

- Vedika:** I think it is only the elderly who are helpless who are constrained to use robots. I mean our grandparents will stay with us, won't they...and we will take good care of them.
- Rakesh:** **(encouragingly):** Well said Vedika. We must take care of the elderly in our family, love and serve them. There is nothing less that I expect from you kids.
- Pavan:** Do you kids know that space exploration relies a lot on robots?
- Vedika:** No Papa. Why don't you tell us?
- Pavan:** You know that space and the universe are infinite. What we have learnt is a fraction of what lies undiscovered. Robots are helping us to uncover many mysteries of space. Robots are better suited than individual humans to carry out research in space. Crafts such as the Soujourner and Curiosity Mars Rover are a few semi-automated mobile robots which are working in space although their remote control lies in human hands on Earth.
- Daivik:** We did see models of Space robots at the museum yesterday.
- Vedika:** Remember Pragyan...the rover of Chandrayaan-2, India's lunar mission that was launched in August 2019? It was supposed to land on lunar soil and beam back information.
- Daivik:** Yes, I remember Pragyan...the lunar rover.
- Vedika:** Well, Pragyan was a robot. It was being controlled from India...unfortunately Chandrayaan-2 did not have a soft landing and our communication with Pragyan was lost.
- Pavan:** Nevertheless, Chandrayaan-2 made with indigenous technology represents a giant leap for India.
- Rakesh:** Absolutely.
- Pavan:** You kids must have heard of drones?
- Daivik:** Yes, Uncle. It flies in the air but is remotely controlled from the ground.
- Vedika:** Yes Papa. They even used drones to sanitize buildings during the Covid pandemic.
- Pavan:** Correctly observed, both of you. Actually drones are a sort of robots which were used for deployment during warfare. These are capable of accurately targeting the enemy from afar. These are also used to rescue injured soldiers. And scientists have also built robot submarines, you know.
- Sneha:** We cannot deny that robots represent our future. Robotic science will determine the shape of the days to come.

- Daivik:** Aunty, what are the changes you think robots will bring?
- Sneha:** Ah! The story of the advancement of robotics is an interesting one. Humanoid Robots classes may involve the use of individual robots customized according to the personal intellectual prowess of a student which will tutor and educate the child. It will interact with the child just like a teacher. It will listen. It will mentor. That's not all. In the future, robots will chat with us...provide us important updates connected with our business or office. They will give suggestions. Intelligent robots of the future will play a major role in healthcare. These will interact with the patients and also carry out health-checks.
- Vedika:** Mummy, I have seen on TV that in future we will have self-driving cars that will be controlled by robots.
- Sneha:** Yes Vedika...you are quite right. We will have robot-controlled self-driving cars in the future. That will change the face of transportation.
- Daivik:** **(worried/thoughtful tone):** But won't some drivers lose their jobs? They will become unemployed.
- Sneha:** Not at all, Daivik. Technology and robotics will not lead to unemployment; rather these will create new job opportunities. Technology is changing rapidly. In the future, the nature of jobs will change thanks to technologies such as robotics and artificial intelligence but jobs will not be lost.
- Pavan:** This is great information, Sneha. People do not have enough authentic information on robotics; especially about intelligent robots.
- Rakesh:** Yet, it is necessary that people become aware about the possibilities. This is even more true for the young generation. They must be made aware of this technology.
- Rakesh (should be Pavan): Yes absolutely! Children are the future of every society; every country. And we cannot imagine a future without robotics.
- Sneha:** Well, let's get ready now to go and see the Statue of Unity on the Narmada.
- Malti:** Oh yes...we lost track of time while we were chatting.
- Rakesh:** It is about 200 km from Ahmedabad..we need to stock up on some food for the journey.

- End-