8 Sensor based projects for beginners

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Do you wear a smartwatch? Tracking the footsteps? How does it happen? Yes, the sensor inside the watch monitors that. Starting from automatic glass doors to humanoid robots, sensors are everywhere.

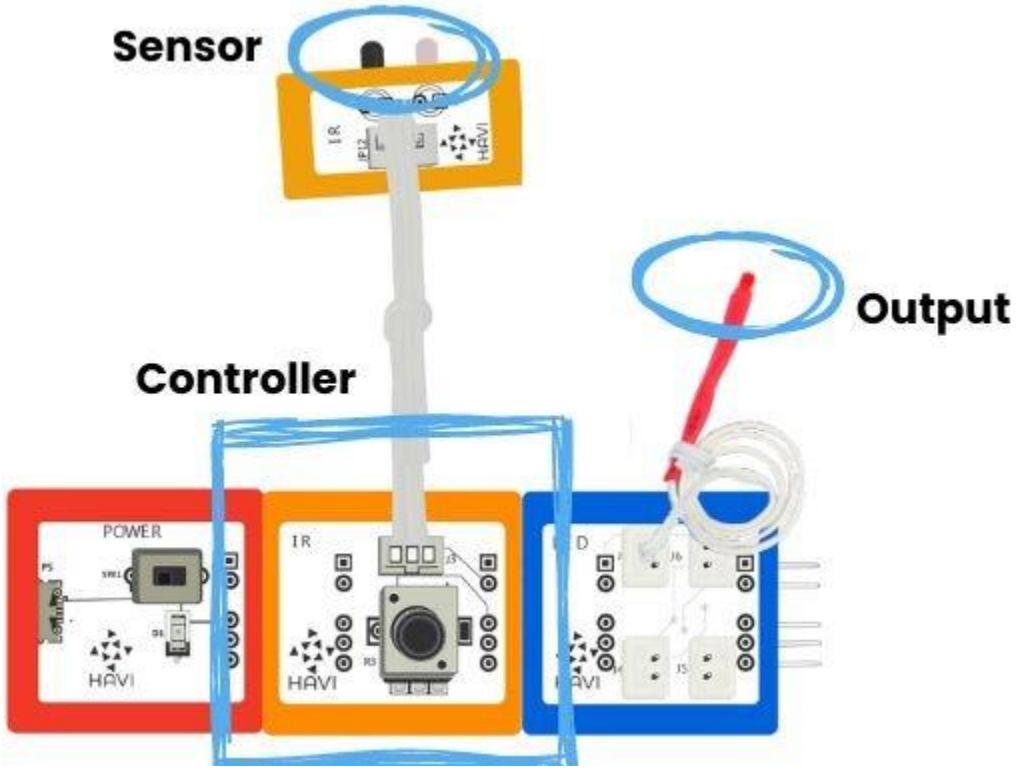
What is a sensor?

In the simplest way, a sensor is a device that detects something from the surroundings.

What happens when someone calls your name on a busy road? You will instantly look at the side of the road from where you have heard your name. Why? Because your ear has heard your name and your brain has a response to that. Yes, your ear is a sensor here..!

Quest: How many sensors does a human have? Think!

Similarly in electronics and robotics, a sensor is a device that detects some input from the environment. Another circuit, mostly a controller, will prepare the response and an output circuit will generate the output.!



As like multiple sensors in our body, there are multiple sensors in electronics.

- An IR sensor can detect an object
- Motion sensor detects motion
- Light sensor detects light
- Ultrasonic sensor detects distance
- Moisture sensor, temperature sensor, sound sensor……. Their names suggest their applications.

What is IR sensor?

- IR sensor or infrared sensor is an electronic circuit that works on the principle of infrared light emission and reflection to detect an object.
- Learn more about How IR sensor works

What is LDR sensor?

- An LDR(Light dependent resistor) or light sensor is a sensor that detects the light and responds accordingly.
- Learn more about How light sensor works

Now let's discuss 8 sensor projects made using Havi DIY robotics kit for beginners which are easy to execute in your science fair and electronics/robotics labs. These projects can be made with other Havi Elements packs too, mentioned specifically along with the projects.

1. Automatic street light project version 1

Sensor used: LDR/Light
How it works?
The streetlights will turn on automatically at night. Means, in the darkness, the lights will be ON and under sunlight, the lights will be off.

How to make: How to make automatic streetlight project – DIY smart street light model
Area: Smart city solution
What will you need: Havi – DIY Smart Lighting Kit

2. Automatic streetlight project version 2

Sensor used: IR
How it works?
The streetlights turn on automatically only when the vehicle passes from

nearby. A benchmark project for saving electricity.

How to make: Make a smart street light project using IR sensor
Area: smart city solution
What will you need: Havi – DIY Robotic Car Kit

3. Automatic hand dryer

Sensor used: IR
How it works?
The smart dryer that detects our hands and automatically dries the hand.
How to make: How to make automatic hand dryer at home – DIY STEAM project for kids
Area: Smart home solution
What will you need: Havi – DIY Robotics Starter Kit

4. Accident prevention system in hairpin bend zone

Sensor used: IR
How it works?
The IR sensor senses the vehicle coming from the opposite side in hairpin bend zones and warns the vehicles coming from the other side.

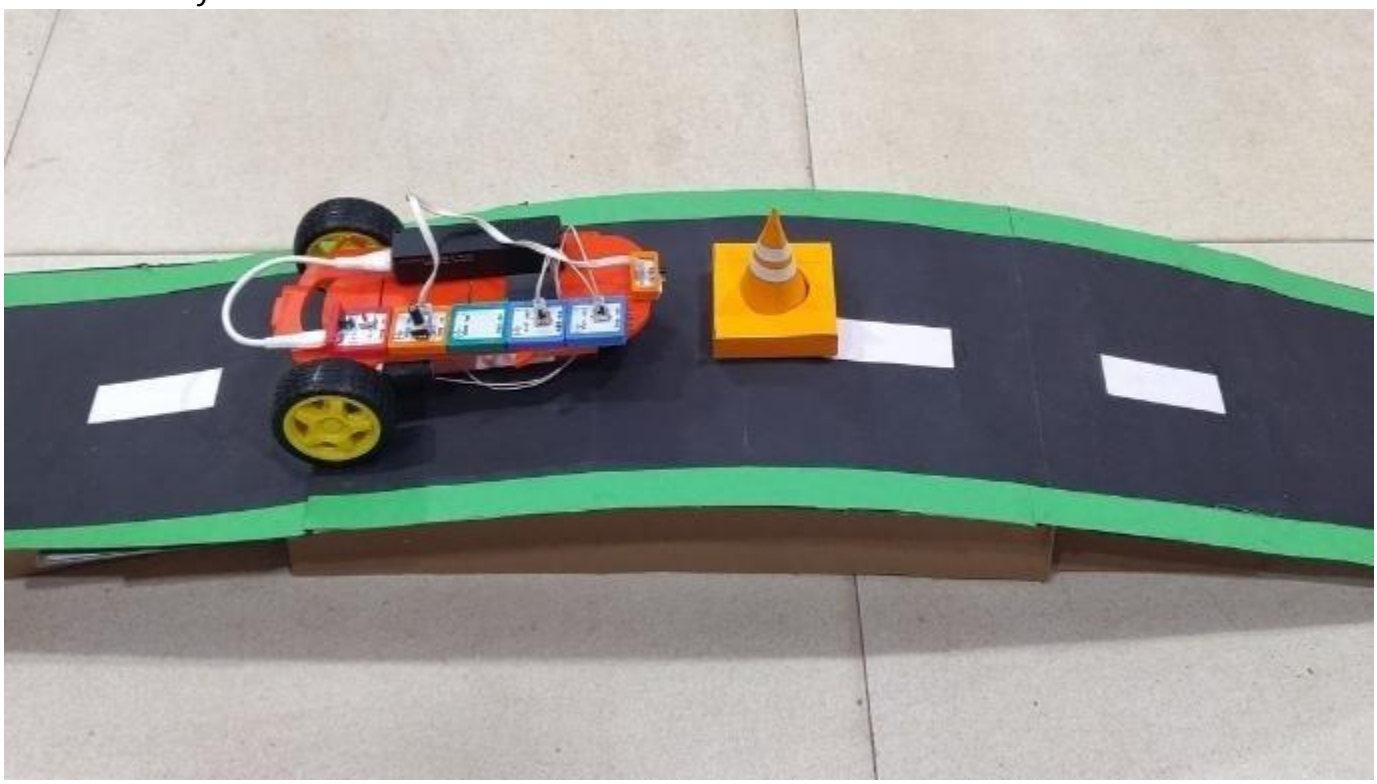
How to make: Accident prevention system for hairpin bend zone in hills
Area: Security, smart city
What will you need: Havi – DIY Object Sensor Projects Kit + Add-ons for additional elements(optional)

5. Touchless sanitizer dispenser

Sensor used: IR
How it works?
The sanitizer automatically comes out when you bring your hand near to the outlet.
How to make: DIY Automatic Sanitizer Dispenser
Area: Health care
What will you need: Havi – DIY Robotics Kit

6. Obstacle avoiding robot

Sensor used: IR
How it works?
The robot/car stops automatically when an obstacle is there, or even turns automatically when an obstacle is detected.



How it works?: How to make an obstacle avoiding robot
Area: smart cars
What will you need: DIY Robotics Starter Kit or DIY Robotic Car Kit

7. Reverse car parking sensor

Sensor used: IR
How it works?
Works as a security system while parking. Detects the backside wall when parking in reverse, stops automatically and/or starts a warning buzzer.
How to make: Reverse Car Parking Sensor Project using Havi Elements
Area: smart cars
What will you need: Havi – DIY Robotics Starter Kit or Havi – DIY Robotic Car Kit

8. Train accident collision avoidance

Sensor used: IR
How it works?
The train stops automatically when another train is in front of it on the same

track.

Area: Smart vehicle, accident avoidance
What will you need: Havi Elements – DIY Robotics Starter Kit or Havi Elements – DIY Robotic Toy Car
What are you waiting for? Start creating all of them today!

You may like following blogs too
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8 Vacation projects for students at home