

ADVANCED STEP IN INNOVATIVE MOBILITY

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ASIMO is a [humanoid robot](#) created by [Honda](#). Introduced in 2000, ASIMO, which is an acronym for "Advanced Step in Innovative MObility", was created to be a helper to people. With aspirations of helping people who lack full mobility, ASIMO is used to encourage young people to study science and mathematics. The robot has made public appearances around the world, including the [Consumer Electronics Show](#) (CES), the [Miraikan](#) Museum in [Japan](#) and the [Ars Electronica](#) festival in [Austria](#).

Honda began developing humanoid robots in the 1980s, including several prototypes that preceded ASIMO. It was the company's goal to create a walking robot which could not only adapt and interact in human situations, but also improve the quality of life.

The research conducted on the E- and P-series led to the creation of ASIMO. Development began at Honda's *Wako Fundamental Technical Research Center* in [Japan](#) in 1999 and ASIMO was unveiled in October 2000.

Introduced in 2000, the first version of ASIMO was designed to function in a human environment, which would enable it to better assist people in real-world situations. Since then, several updated models have been produced to improve upon its original abilities of carrying out mobility assistance tasks. A new ASIMO was introduced in 2005, with an increased running speed to 3.7 mph, which is twice as fast as the original robot.

Form. ASIMO stands 4 feet 3 inches (130 cm) tall and weighs 119 pounds (54kg). Research conducted by Honda found that the ideal height for a robot was between 120 cm and the height of an average adult, which is conducive to operating door knobs and light switches. ASIMO is powered by a re-chargeable 51.8V lithium ion battery with an operating time of one hour. Switching from a nickel metal hydride in 2004 increased the amount of time ASIMO can operate before recharging. ASIMO has a three-dimensional computer processor that was created by Honda and consists of a three stacked die, a processor, a signal converter and memory. The computer that controls ASIMO's movement is housed in the robot's waist area and can be controlled by a PC, wireless controller or voice commands.

Abilities. ASIMO has the ability to recognize moving objects, postures, gestures, its surrounding environment, sounds and faces, which enables it to interact with humans. The robot interprets voice commands and human hand movements, enabling it to recognize when a handshake is offered or when a person waves or points, and then respond accordingly. ASIMO responds to questions by nodding or providing a verbal answer and can recognize approximately 10 different faces and address them by name.

Mobility. ASIMO can adjust the length of its steps, body position, speed and the direction in which it is stepping. Its arms, hands, legs, waist and neck also have varying degrees of movement. ASIMO has a total of 34 degrees of freedom. The neck, shoulder, wrist and hip joints each have three degrees of freedom, while each hand has four fingers and a thumb that have two degrees of freedom. Each ankle has two degrees of freedom, and the waist, knees and elbows each have one degree of freedom.

TOKYO, Japan, November 8, 2011 - Honda Motor Co., Ltd. today unveiled an all-new ASIMO humanoid robot newly equipped with the world's first autonomous behavior control technology. With a further advance in autonomy, the all-new ASIMO can now continue moving without being controlled by an operator. Moreover, with significantly improved intelligence and the physical ability to adapt to situations, ASIMO took another step closer to practical use in an office or a public space where many people come and go.

Improved task-performing capability. Honda has developed a highly functional compact multi-fingered hand, which has a tactile sensor and a force sensor imbedded on the palm and in each finger, respectively, and which acts to control each finger independently. Combined with the object recognition technology based on visual and tactile senses, this multi-fingered hand enables the all-new ASIMO to perform tasks with dexterity, such as picking up a glass bottle and twisting off the cap, or holding a soft paper cup to pour a liquid without squishing it. Moreover, ASIMO is now capable of making sign language expressions which require the complex movement of fingers.

Key specifications of the all-new ASIMO are:

1. Height 130cm.
2. Weight 48kg (decreased 6kg from previous model).
3. Operating degrees of freedom Total: 57 degrees of freedom (increase of 23 degrees of freedom from previous model).
4. Running speed 9km/hour (previous model: 6km/hour)

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