

## A Brief Introduction about Service Robots

Definition and Purpose

Introduction for Existing Service Robots

Domestic Robot

Scientific Robot

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## Definition and Purpose

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According to Wikipedia, service robots basically assist human beings, especially by performing a job that is dirty, dull, distant or repetitive. In a word, performing a job that we dislike. And based on ISO standard, a robot requires a degree of autonomy, which means it has the ability to perform intended tasks based on present state independently. When it comes to service robots, it range from partial autonomy to fully autonomy which involves no human robot intervention.

At present, service robots are divided into several categories according to their personal or professional use.

## Introduction for Existing Service Robots

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The possible applications have been widely spread nowadays, and as the definition of Service robot is ambiguous there are a lot of categories. This introduction will cover areas include domestic and frontline services.

## Domestic Robot

Domestic robots perform tasks that human regularly performed in daily life, such as cleaning. This kind of robots will work in many situations as if the owner has disabilities or too busy to do these works. And these robots have urgent market demand as there are more and more aged people who can't perform daily tasks. The big category is divided into several small ones, include indoors, outdoors etc.. And even social robots are also considered domestic robots sometimes.

For this kind of robots, there are several examples.

The earliest kind of domestic robots is called "HERO", which first sold in 1980s. This is the most popular kind of robot at that time. HERO1 is controlled by onboard computer, and because the limit of hardware, the robot had got a RAM of only 4KB. When the robot first came out, the price is \$2,500, and that's about \$6,300 now. So it's quite obvious that the robot is not very affordable for most family at that time. As a result, only about 14,000 units had been sold in 8 years. And even though this robot is considered domestic robots, it's actually used for educational purpose.

Roomba is a series of robots focusing on vacuum cleaners, and it started quite a long ago in 2002. This series of robots are mostly in disc-shape. So that means the bulk of the robot is not that big and the mass is lighter. To fulfill the responsibility of been a vacuum cleaners, it had sensors which can detect obstacles and dirty spots on the floor. And these robots have a pair of brushes, rotating in opposite directions, to pick up debris from the floor. In most models, the brushes are followed by a squeegee vacuum, which directs the airflow through a narrow slit to

increase its speed in order to collect fine dust. For the earlier series, they can only perform simple cleaning tasks. Nowadays, as embedded computer in conjunction of Roomba Open Interface, some can perform tasks that are more creative.

## **Scientific Robot**

Quite similar to the domestic ones, Some scientific robots are used to so simple but repetitive jobs, such as works performed by gene samplers.