服务机器人是一种半自动或全自动工作的机器人,从机器人的功能特点来说，服务机器人与工业机器人的本质区别在于，工业机器人的工作环境是已知的，服务机器人所面临的工作环境绝大多数是未知的。按照应用领域划分服务机器人可分为：个人/家用机器人和专业服务机器人两大类。服务机器人的应用范围很广，主要从事维护保养、修理、运输、清洗、保安、救援、监护等工作。具体可分为医疗机器人、教育机器人、家政机器人、农业机器人、娱乐机器人、军用机器人、水下机器人、安防机器人、地下机器人等类型。

服务机器人虽然是机器人家族中的一个年轻成员，但发展势头不可小觑，以下将介绍几种现有的服务机器人。

第一种是特技机器人。美国迪士尼公司在亚马逊公司主办的全球人工智能会议上经过视频展现了其研制的一款高空“特技”机器人，未来能够在电影中担纲特技“替身”。特技机器人在电影领域有着很大的潜力，不仅比人类特技演员的动作更具有连续性，而且不需要医疗防护和冒人身危险，就可以在空中摆出明显的超级英雄的姿势和动作，具有更强的视觉冲击力。

第二种是血管机器人。目前世界上研究的大多数血管机器人都是指MEMS机器人。MEMS血管机器人是随着MEMS技术的发展不断进步的。随着微机电系统的发展，人类已经可以加工越来越小的机器。这些机器小到一定程度就可以放进血管行使部分医疗作用。MEMS血管机器人其实就是采用普通机器人的微型化。血管机器人可以参与治疗任何与血管有关的疾病。除常见的心脑血管疾病外，血管机器人还具有血管内部探测，携带药物定点治疗，治疗动脉粥样硬化、抗癌、去除血块、清洁伤口、帮助凝血、祛除寄生虫、治疗痛风、粉碎肾结石、人工授精以及激活细胞能量等作用，使人不仅保持健康，而且延长寿命。

第三种是配送机器人。疫情当前，配送机器人大显身手。据京东贵州智能配送站负责人程琳介绍，此次疫情爆发之后，京东物流率先在业内推广无接触配送服务，当天就直接投入了两台配送机器人，解决小区居民的配送问题。

京东快递员挑选好货物后，在配送机器人屏幕上登录账号，输入订单号即可把货物投入，每台配送机器人可以装载22个中小型货物。快递员启动机器人后，机器人会自动避开障碍物并按照路线前往收货地点。到达指定地点后，机器人会自动发短信或拨打电话提醒客户提货，全部提取完成或等待30分钟后将自动返程。

智能配送机器人的感知系统十分发达，除装有激光雷达、GPS定位外，还配备了全景视觉监控系统，前后的防撞系统以及超声波感应系统，以便配送机器人能准确感触周边的环境变化，预防交通安全事故的产生。此外，该种机器人最快可以跑30码，最远可以跑10公里，基本上一个机器人就可以满足一个小区的配送任务。

由上述内容可知，人们理想中的服务机器人需要具备以下几种功能。

服务机器人应该具有很强的适应能力，可以在未知的地方正常工作。由字面意思可知，服务机器人即为人服务的机器人，那么它自然与人们的生活息息相关，正如世界上没有两片相同的树叶一样，不同人的生活区域生活习惯都是不同的，不同事情的所处位置发生时间也是不同的。拿扫地机器人为例，不同的家庭的家具摆放、地板质地、冷热情况都是不同的，扫地机器人只有拥有很强的适应能力才能胜任不同家庭的要求，否则就影响工作效率。

服务机器人应该具有预判的功能，能够在人类下达命令前通过已知的知识提前判断可能要进行的任务，或通过日常的观察和浩瀚的知识库预判事情，让人们可以提前做好准备迎接各种可能的到来。服务机器人的预判可以体现在各个方面，大量的数据分析能够让它判断可能发生的事情，例如根据饮食习惯提前告知可能存在的营养不均衡，或者及时发现突发疾病等突发现象，在为人们提供悉心服务的同时，保障人们的生命财产安全。

服务机器人应该具有可变的外形和颜色。服务机器人是一定要走进人们的家庭的，服务机器人本身也会成为家庭装饰的一部分，这就要求服务机器人在外表上能与家庭环境相协调，不能过于突兀。但是家庭的环境并不是一成不变的，当人们改变家庭环境时，服务机器人应该可以让人们对它的形态及颜色进行选择，或者自行进行调整，真正做到融入人们的日常生活，而不是成为一个明晃晃的不合群的存在。

服务机器人应该具有一机多用的功能，即一种服务机器人可以完成多项不同的任务。所谓在精不在多，一种服务机器人应该承担不止一份工作，否则按照人们生活的琐碎程度，各式各样的机器人只怕会“人”满为患，造成极大的不便。而且特定的服务机器人在人们实际生活中可能并不会被使用原先设定好的功能而去承担别的任务，依旧以扫地机器人为例，它的本职工作是打扫卫生，但是平坦的顶面使它颇受小孩子的喜爱，被迫承担负重的责任。因而，设计服务机器人时应该尽可能多地同时实现同一类别功能，达到一机多用，避免资源浪费。

服务机器人应该有益于人们的身心健康，可以代替人类完成危害身体健康的工作，为人们提供治疗，为人们提供精神上的享受。机器人的身体可谓是“百毒不侵”，只要不损坏存储信息的地方，通过更换零部件就能焕然一新，相比之下人类的身体要柔弱的多，服务机器人的初衷便是代替人类完成困难的工作，例如高空作业和各种爆炸类的电影特效，这样一来不仅能保障人身安全、减少人力成本，还能提高工作效率。服务机器人的关节更加灵活，可以完成很多高难度的动作，不仅能用来完成危险的任务还可以进行文艺活动，为人们带来审美的愉悦。此外，服务机器人的“冷静”可以让它进行分毫不差的医学手术，减少医疗事故，挽救更多的生命。

总而言之，服务机器人重点在于“服务”二字，理想的服务机器人自然是能够为人类提供最全面最贴心服务的机器人，它可能具有这样或那样的功能，但都是为了人们生活的便利。

Service robot is a kind of semi-automatic or fully automatic robots. From the functional characteristics of robot, the essential difference between service robot and industrial robot is that the working environment of industrial robot is known but the working environment faced by service robot is mostly unknown. According to application fields, service robots can be divided into two categories: personal/household robots and professional service robots. Service robots have a wide range of applications, mainly engaged in maintenance, repair, transportation, cleaning, security, rescue, monitoring and other work. It can be divided into medical robots, educational robots, domestic robots, agricultural robots, entertainment robots, military robots, underwater robots, security robots, underground robots and other types.

Although service robots are a young member of the robot family, their development momentum cannot be underestimated. The following will introduce several existing service robots.

The first is stunt robot. Disney Company presents a high-altitude "stunt" robot that can play the role of "body double" in the movie in the future. Special effects robots have great potential in the field of movies. They not only have more continuity than human special effects actors, but also can pose as obvious superheroes in the air without medical protection and taking personal risks, with stronger visual impact.

The second is vascular robot. At present, most vascular robots studied in the world refer to MEMS robots. MEMS vascular robots are progressing with the development of MEMS technology. With the development of MEMS, human beings can already process smaller and smaller machines. These machines are small enough to fit into blood vessels to perform some medical functions. MEMS vascular robot is actually the miniaturization of common robots. Vascular robots can participate in the treatment of any disease related to blood vessels. In addition to common cardiovascular and cerebrovascular diseases, vascular robots also have the functions of detecting inside blood vessels, carrying drugs for targeted treatment, treating atherosclerosis, resisting cancer, removing blood clots, cleaning wounds, helping blood coagulation, removing parasites, treating gout, crushing kidney stones, artificial insemination, activating cell energy, etc. Not only can people keep healthy, but also prolong their life span.

The third is the distribution robot. Distribution robots have played a great role in the face of the epidemic. According to Cheng Lin, head of Jingdong Guizhou Intelligent Distribution Station, Jingdong Logistics took the lead in promoting contactless distribution services in the industry after the outbreak of the epidemic. On the same day, it directly put in two distribution robots to solve the distribution problems of residents in the community.

After Jingdong Express selects the goods, login the account number on the distribution robot screen and enter the order number to put the goods into. Each distribution robot can load 22 small and medium-sized goods. After the courier starts the robot, the robot will automatically avoid obstacles and follow the route to the receiving place. After arriving at the designated place, the robot will automatically send a text message or call the customer to remind him to take delivery of the goods, and the robot will automatically return after completing all the extraction or waiting for 30 minutes.

The sensing system of intelligent distribution robot is very developed. Besides laser radar and GPS positioning, it is also equipped with panoramic vision monitoring system, front and rear anti-collision system and ultrasonic sensing system, so that the distribution robot can accurately sense the surrounding environment changes and prevent traffic safety accidents. In addition, the robot can run as fast as 30 yards and as far as 10 kilometers. Basically, one robot can meet the distribution tasks of a community.

From the above, it can be seen that people's ideal service robot needs to have the following functions.

Service robots should have strong adaptability and can work normally in unknown places. According to the literal meaning, a service robot is a robot that serves people, so it is naturally closely related to people's life. Just as there are no two identical leaves in the world, the living habits of different people in different living areas are different, and the location and time of different events are also different. Take the sweeping robot as an example. Different families have different furniture placement, floor texture and temperature. The sweeping robot can meet the requirements of different families only if it has strong adaptability, otherwise it will affect the work efficiency.

Service robot should have the function of pre-judgment, which can judge the possible tasks in advance through the known knowledge or pre-judgment through daily observation and vast knowledge base, so that people can be prepared for various possible arrival in advance. Pre-judgment of service robots can be reflected in various aspects. A large amount of data analysis can enable it to judge possible events, such as informing the host of possible nutrition imbalance in advance according to eating habits, or finding unexpected phenomena such as sudden diseases in time. While providing meticulous services for people, it also ensures the safety of people's lives and property.

Service robots should have variable shapes and colors. Service robots must enter people's homes and become a part of home decoration. This requires the service robot to keep the appearance consistent with the family environment. However, the family environment is not always the same. When people change the family environment, the service robot should let people choose its shape and color so as to integrate into people's daily life.

A service robot should have a multi-purpose function, meaning that a service robot can accomplish many different tasks. If a service robot takes on a job, according to the trivial degree of people's life, all kinds of robots will fill people's houses and bring great inconvenience to people's life. In addition, specific service robots may not be used with previously set functions. Still take the sweeping robot as an example, its job is cleaning, but its flat top makes it popular with children and forced to take the responsibility of picking up children. Therefore, when designing a service robot, it should realize as many functions of the same category at the same time as possible to avoid waste of resources.

Service robots should be beneficial to people's physical and mental health, and can replace human beings to complete the work harmful to health, provide treatment for people and provide spiritual enjoyment for people. The robot's body is very strong. As long as it does not damage the place where information is stored, it can be refreshed by replacing parts. Compared with the human body, it is much weaker. The original intention of service robots is to replace human beings to complete difficult tasks, such as aerial work and various explosive movie special effects. This will not only ensure personal safety, reduce labor costs, but also improve work efficiency. The joints of service robots are more flexible and can perform many difficult actions. They can not only be used to complete dangerous tasks but also carry out artistic activities, bringing aesthetic pleasure to people. In addition, the service robot will not shake hands, and can carry out accurate medical operations to reduce medical accidents and save more lives.

In a word, the function of service robots mainly lies in service. The ideal service robot is a robot that can provide the most comprehensive and considerate service for human beings. No matter what function it has, it is for people to have a convenient life.