

Foreword

Industrial robots were first used on a production line in 1962. Today, they are more than one million in number, the principal applications being welding, assembly, handling, machining, paint-spraying and gluing. The 1980s witnessed the first uses of robots outside the area of industrial production, particularly in applications in which the respective task could not be executed manually because it was unacceptable or too dangerous for a human to perform or because the required accuracy and/or force could not be achieved by manual means. Robots of this type are known as service robots.

Nowadays, service robots are at work cleaning buildings and roads or monitoring public areas, such as museums. Ever more robots are being used to carry out hazardous maintenance and inspection operations in industry, local authorities and the energy sector. At the personal and domestic level, robots are increasingly finding applications as robot vacuum cleaners, automated lawn-mowers and toy robots. These personal robots may be early examples of future systems which will do useful jobs and assist humans in everyday environments. In the recent past, experts have seriously discussed the possibilities of repeating the success of the personal computer with personal robot which assists individuals in their daily lives beyond the already existing robot vacuum cleaners or lawn-mowers.

In 1999, service robots were assessed statistically for the first time through a joint publication by the International Federation of Robotics (IFR) and the United Nations Economic Commission for Europe (UN ECE). Prior to this effort a suitable classification scheme for the heterogeneous domain of service robots and a data collection scheme have been worked out and improved ever since. Today, the World Robotics chapter on Service Robotics has established itself as the reference in statistics, market forecasts, product overview and case studies on technology, entrepreneurial activity and current research. Robot suppliers, media, government bodies, financial analysts and technology scouts are among its typical readers.

In response to the increasing interest in service robotics it was decided in 2008 by the IFR Statistical Department that from 2009 on the World Robotics Report be expanded into a two volume edition. Therefore, this volume marks the first edition of the "World Robotics 2009 service robotics yearbook". Compared to the former chapter this volume has increased in size due to the amount of material offered, particularly regarding information on pioneering products, case studies on selected research roadmaps, start-ups, technical innovations and research.

Cost-benefit-considerations from an end-user's point of view, particularly in the professional service robot domain, are the main factor for investing into these products. Therefore, in the introduction of service robot products (in their different application domain) information on their socio-economics should be emphasized wherever possible. The material offered is a first step into this direction but will be continuously expanded for future issues of the report. In the text, an abundance of references are listed, where web-based links have been given priority in order to facility a quick access to additional sources. A small selection of service robotics photos have been integrated into the document.

We have to express our deepest thanks to the many companies and organisations which have contributed material for preparing the statistics.



Martin Hägele
Chairman "Service Robotics Group"
International Federation of Robotics (IFR)