

Bosch presents automation software for service robots at LogiMAT

Modular software platform for fast and easy development

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- ▶ Software concept from Bosch facilitates access to the growth market of service robots
- ▶ Particularly precise and efficient function ensures safe obstacle detection and collision avoidance
- ▶ Modular software with flexible sensor connection simplifies integration into different robot hardware

Abstatt, Germany – Service robots for commercial and industrial activities are a major trend. According to the International Federation of Robotics (IFR), 121,000 of the smart machines for professional use were sold worldwide in 2021, which represents a market growth of 37% in comparison to the previous year. The many possible applications encompass everything from the hotel and restaurant industry to medical technology, agriculture, and industrial cleaning. The functional quality of mobile robots is largely determined by the automation software. Its development requires considerable robotics expertise and entails high investment costs. Thanks to a new software platform from Bosch, the automation of service robots can now be realized very quickly, easily, and efficiently. Machine manufacturers can thus concentrate on the core of their development work – that is, implementing the specific robot function for the application in question. “With our new software concept for automation, we are simplifying the development of service robots and making it easier for small and medium-sized manufacturers in particular to access the growing robotics market,” explains Philipp Kurek, who is responsible for the Off-Highway operating unit at Bosch Engineering GmbH.

The new software platform from Bosch has a modular structure and offers all the necessary functions for complete robot automation in the form of three subelements: localization and mapping, obstacle detection, and motion planning (navigation). The various software modules can be integrated into the robot’s control unit either individually or as a harmonized package. The Bosch Group

boasts vast experience and extensive research expertise in navigation, driver assistance systems, and automation – for example, through developments for the automotive sector. “On this basis, we were able to create robot software with particularly precise, efficient perception of the surroundings, reliable signal evaluation, and smart navigation functions. Obstacles are safely avoided, and collisions are prevented,” adds Isabell Maier, head of automation and robotics at Bosch Engineering GmbH.

The parameters of the automation software can be flexibly adapted to the specific requirements of the respective application. For example, a narrow obstacle avoidance path for cleaning robots can be specified in the same way as a greater safety distance for robots transporting potentially hazardous substances (e.g., hot liquids). The software also provides great freedom when it comes to the hardware concept. Depending on the robot’s operating conditions, lidar sensors, cameras, or other type of sensors can be integrated into the system. Standardized interfaces of the robot operating system (ROS) facilitate the integration of the software modules into the machine’s software architecture.

After around three years of development, Bosch’s robot automation software has been in successful operation in a pilot application since the beginning of 2023. Further information is available to interested LogiMAT visitors at booth 6D31 in hall 6.

Press photos: #0cfe12fd, #f3151d06

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Additional information can be accessed at www.bosch-engineering.com.

Mobility Solutions is the largest Bosch Group business sector. According to preliminary figures, it generated sales of 52.6 billion euros in 2022, and thus contributed almost 60 percent of total sales from operations. This makes the Bosch Group one of the leading automotive suppliers. The Mobility Solutions business sector pursues a vision of mobility that is safe, sustainable, and exciting, and combines the group's expertise in the domains of personalization, automation, electrification, and connectivity. For its customers, the outcome is integrated mobility solutions. The business sector's main areas of activity are injection technology and powertrain peripherals for internal-combustion engines, diverse solutions for powertrain electrification, vehicle safety systems, driver-assistance and automated functions, technology for user-friendly infotainment as well as vehicle-to-vehicle and vehicle-to-infrastructure communication, repair-shop concepts, and technology and services for the automotive aftermarket. Bosch is synonymous with important automotive innovations, such as electronic engine management, the ESP anti-skid system, and common-rail diesel technology.

The Bosch Group is a leading global supplier of technology and services. It employs roughly 420,000 associates worldwide (as of December 31, 2022). According to preliminary figures, the company generated sales of 88.4 billion euros in 2022. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT provider, Bosch offers innovative solutions for smart homes, Industry 4.0, and connected mobility. Bosch is pursuing a vision of mobility that is sustainable, safe, and exciting. It uses its expertise in sensor technology, software, and services, as well as its own IoT cloud, to offer its customers connected, cross-domain solutions from a single source. The Bosch Group's strategic objective is to facilitate connected living with products and solutions that either contain artificial intelligence (AI) or have been developed or manufactured with its help. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "Invented for life." The Bosch Group comprises Robert Bosch GmbH and its roughly 440 subsidiary and regional companies in some 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. With its more than 400 locations worldwide, the Bosch Group has been carbon neutral since the first quarter of 2020. The basis for the company's future growth is its innovative strength. At 128 locations across the globe, Bosch employs some 85,000 associates in research and development, of which nearly 44,000 are software engineers.

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