

Powering UP Service Robots For Personalized Assistance

Industry: Malls, Museums, and Service

Product: UP Squared Developer Board

Introduction

Many shopping centers and tourist attractions are facing an increase in visitors and foot traffic. This increase in visitors also means an increased demand for providing information and guided services. Whether due to lack of manpower or the impracticality of maintaining a staff large enough to engage with every visitor, these public businesses are unable to provide personalized service to address each visitor's individual needs.

To tackle this problem, many public places, such as malls and museums, have begun deploying two key technologies, kiosks and service robots. Kiosks are great at providing instant visual information in an interactive format, but are fixed in place. Service robots provide an advantage over kiosks in being able to move, but many lack the interactivity or visual information aspects of kiosks. What is needed is a system which combines both into a seamless system offering both the visual and interactive engagement of kiosks with the mobile and guided functions of a service robot.

One company is working to develop a solution that meets this need, by creating a service robot with kiosk functions built in. By combining the functionalities of kiosks and service robots, their system will be able to handle a wide range of tasks, helping to reduce staff workload and provide personalized service for anyone who interacts with the service robot.



To create their service robot, the company was faced with several significant challenges. To be an effective service robot, it needs to operate for long periods of time without having to recharge, be small enough to effectively navigate public spaces, and be designed with a computing system that can handle the tasks of both kiosks and controlling a service robot. One key component to meeting these challenges is choosing the right embedded computer board.

Challenges

The company was faced with several challenges in choosing the right computer board for their service robot. The company couldn't simply design the robot with one board for the kiosk functions and one to control the robot, as this would create a system which was bulky and energy inefficient, not to mention increasing the development and testing time to configure two boards to operate in tandem with each other.

To meet the company's needs, a truly special board was needed to power their service robot. It needed to handle multiple functions, have low power consumption for battery powered operation, be compact to fit within the robot, and be configurable to the unique demands of the project.

Multi-function Board

To help with size and power consumption, the robot needs to be controlled by a single embedded system board rather than splitting kiosk and robot functions between two boards. The system board needs the processing power and I/O connections to handle the functions of both.

Battery Powered

To maximize the usability of the service robot and limit downtime for charging, the system needs to minimize power usage through the usage of low-power high-performance components.

Compact Size

In order to help fit within the form of the service robot, the system needs to be compact, allowing the company to design their robot to be small and nimble enough to maneuver through public spaces.

Purpose Built Board

Due to the special nature of the service robot, an off-the-shelf product would not

suffice. The company needed a board that could be configured to integrate seamlessly with their design.

Solution

AAEON worked closely with the company to find the best solution for their project. The UP Squared Board, featuring Intel Atom, Celeron, and Pentium processors (formerly Apollo Lake), met the needs for a low-power high-performance compact embedded board. With AAEON's Manufacturer Services and dedicated OEM/ODM support, the UP Squared Board was customized to fit the needs of the developers to easily install and integrate into their service robot.

The UP Squared Board is a favorite among developers of mobile applications.

Powered by Intel

The UP Squared Board is one of the fastest maker boards available, featuring the option of Intel Atom E3950, Celeron N3350, and Pentium N4200. With Intel processors, the UP Squared Board can support processing speeds up to 2.5GHz (with Pentium N4200). Additionally, the UP Squared Board can be configured with up to 8 GB of dual channel LPDDR4 memory, and built-in eMMC storage up to 128 GB.

Low Power Consumption

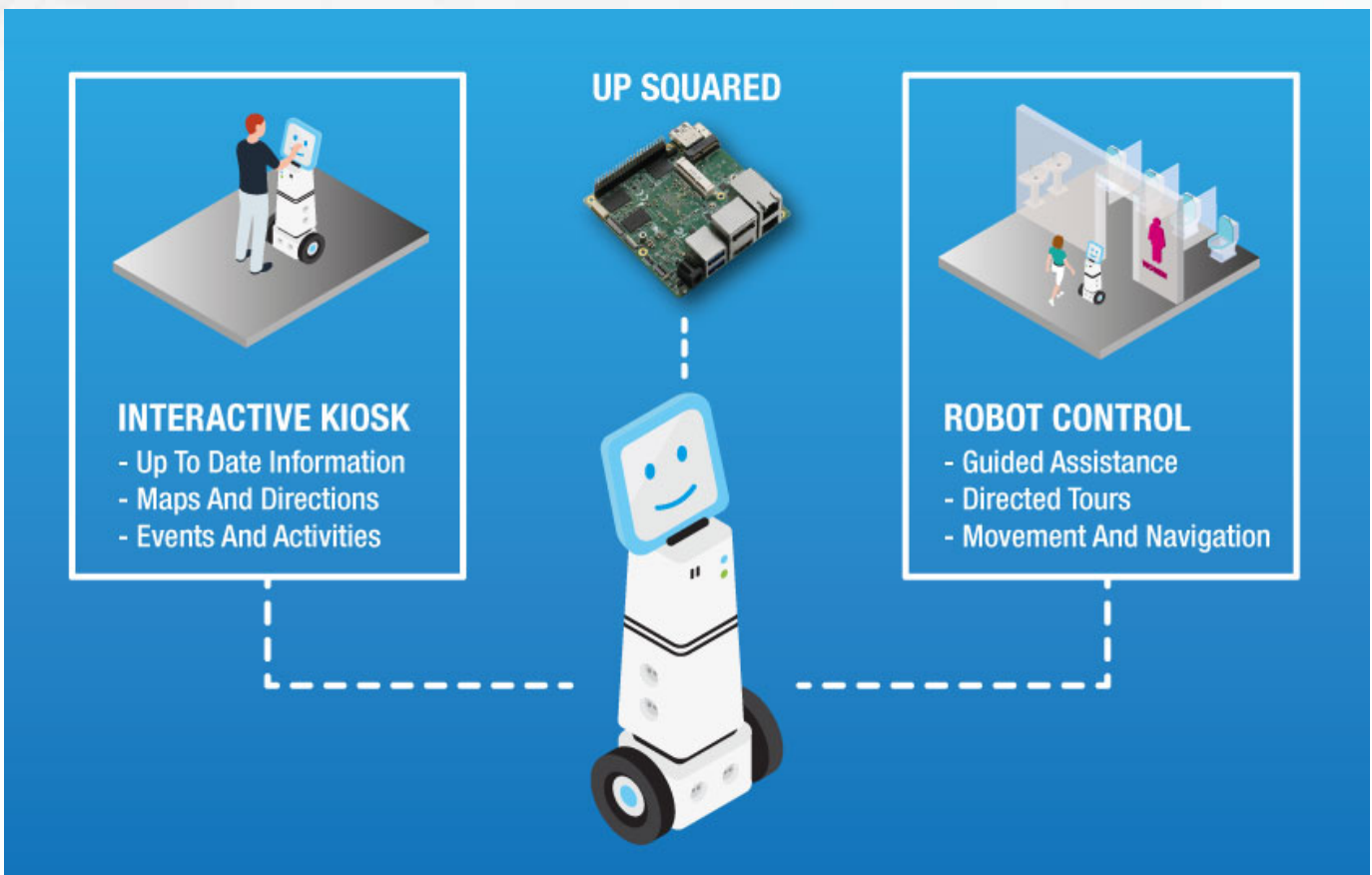
Designed with low-power high-performance components, the UP Squared Board is a favorite among developers of mobile applications from robotics to drones. This helps to ensure battery longevity and minimize downtime for recharging.

Compact Size

The UP Squared Board is a compact maker board built to fit into any application. At only 85.6 mm by 90 mm, it can fit into virtually any imbedded system or application.

Customization

With AAEON's Manufacturer Services and OEM/ODM support, AAEON provides a range of services and support from development to testing to manufacturing and mass production. The UP Squared Board, as well as our full line of embedded boards and systems, can be customized to fit the needs of customers, either through alternate board sizes and dimensions to the configuration and selection of I/O ports.



Impact

With the features of the UP Squared Board combined with the customization and Manufacturer Services of AAEON, the company is able to deploy their service robots to customers with faster development and a reduced time-to-market. This saves the company both time and money, allowing them the flexibility needed to meet their customers' needs.

With the deployment of these service robots, the public at large can enjoy a more personalized and tailored experience when visiting malls, museums or other tourist attractions. These places can also enjoy reduced workloads, better enabling their staff to focus on the most pressing needs of the public.

Product

The UP Squared Board from AAEON is one of the fastest maker boards available today. UP Squared features a range of processors including Intel Atom E3950, Celeron N3350, and Pentium N4200 (formerly Apollo Lake), combined with up to 8 GB of LPDDR4 RAM and built-in eMMC storage up to 128 GB. The UP Squared Board offers expandability with its 60-pin EXHAT and 40-pin GP Bus connectors, as well as SATA3, m.2 2230 and even an mPCIe slot, perfect for the AI Core X with Intel Movidius Myriad X. The UP Squared Board also features I/O three USB 3.0 ports, one HDMI and one DP port, and two Gigabit Ethernet ports.

Thanks to AAEON's Manufacturer Services, our clients can also enjoy full OEM/ODM support, from customizing existing boards, to providing full end-to-end service from design to testing to mass production. AAEON works closely with partners to help accelerate development and shorten time-to-market.



About AAEON

Established in 1992, AAEON has become one of the leading designers and manufacturers of advanced industrial and embedded computing platforms. Committed to innovative engineering, AAEON provides Industry 4.0 integrated solutions, hardware and intelligent automated services for premier OEM/ODMs and system integrators worldwide, as well as IoT solution platforms that seamlessly consolidate virtual and physical networks. Reliable and high quality computing platforms include industrial motherboards and systems, industrial displays, rugged tablets, PC/104, PICMG and COM modules, embedded SBCs, embedded controllers, network appliances and related accessories. AAEON also offers customized end-to-end services from initial product conceptualization and product development through to volume manufacturing and after-sales service programs. It is also committed to continuously redefining and harmonizing the management and development processes of the industry.

With its constant pursuit of innovation and excellence, AAEON became a member of the ASUS group in 2011, enabling the company to further strengthen its leadership, access advanced technology from ASUS, and leverage resources from within the group. AAEON is poised to offer more diversified embedded products and solutions at higher quality standards to meet world-class design and manufacturing demands in the years to come.

AAEON is an Associate member of the Intel[®] Internet of Things Solutions Alliance.

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