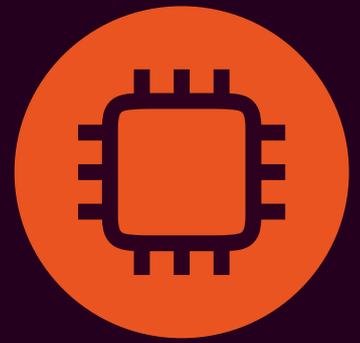# RobotCheers uses Ubuntu to create hospitality robots

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CASE STUDY 2017

## Summary

- Ubuntu at the heart of Spiro, the advanced concierge / meet-and-greet / tour guide robot

- Security and stability of Ubuntu was central to RobotCheers' decision to engage with Canonical

Until recently the penetration of advanced robotics into our everyday lives seemed like the stuff of science fiction. Now however, advances in computing power alongside the continued evolution and cost-reduction of advanced mechanical systems mean that robots, (both stationary and self-actuating) are finally starting to appear as an increasingly normalised part of our lives. According to one report by International Data Corporation, worldwide spending on robotics and related services will hit $135.4 billion by 2019, with global robotics spending set to grow at a compound annual growth rate of 17%.[1]

An industry that can significantly benefit by incorporating robotics is the hospitality sector. Here, robots can be used as a meet and greet, to provide information and even to guide guests to particular locations. Travelzoo has conducted research of more than 6,000 travellers in Asia, Europe and America, finding that nearly 80% of respondents expect robots to play a big part in their lives by 2020. According to the survey, international travellers are largely comfortable with robots playing a role in their holidays, with three quarters believing that they will make their lives significantly better.

While many people are increasingly open to the idea of robotics in the hospitality sector, it is still important to consider how the introduction of these robots could be integrated into different countries around the globe. For example, Travelzoo's research found that German and French respondents were the most averse to the introduction of robotics in the tourism industry, while Chinese and Brazilian respondents were by far the most positive towards such changes.



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Spiro used in a hotel to greet guests

One business which has created a ground-breaking robot for use in the hospitality sector is RobotCheers. The company, which has over fifteen years' experience developing robotics products, has created a revolutionary new robot called Spiro that can be used in hotels and at events to enhance customer experiences.

## The challenge: Finding the right OS for Spiro

From a technical point of view, both stability and flexibility are key within robotics, and building a platform that allows features to be easily adjusted and is unlikely to malfunction, is extremely important.

In order to develop a robot with these specific abilities, RobotCheers needed to find an operating system (OS) that was robust, provided an easy route to adapting it's robot to different requirements, and which could provide a high level of security. The operating system required for Spiro would also need to be stable, responsive, and unlikely to cause any issues in terms of latency.

[1] http://www.idc.com/getdoc.jsp?containerId=prUS41046916

Given the costs and expertise involved in maintaining and servicing advanced robotics in the field, it was also seen as critical that the OS chosen should minimise the chances of device freeze or failure.

After speaking to a number of potential OS providers throughout the course of 2016, RobotCheers selected Ubuntu as Spiro's primary OS. Building upon the Ubuntu operating system, the company's development project was ultimately completed in July 2016 and announced during the 5th CIROS summit in Shanghai, China.

## Why Ubuntu?

Spiro relies heavily on the Robotic Operating System (ROS) – an open source collection of tools, libraries and conventions designed to simplify the task of creating complex and robust robot behavior across a wide variety of robotic platforms. These tools include over 2,000 robot libraries, and at the heart of it all is Ubuntu.

As the most popular robotic development environment, ROS is built on Ubuntu and benefits from the open source operating system's unique combination of security and open flexibility. By relying on ROS' wide selection of libraries and development tools, RobotCheers is able to quickly adapt its robots' functionalities, ensuring more rapid iterations and ultimately a faster time to market. Through the incorporation of Ubuntu, ROS also ensures that Spiro is fully automated and optimised – creating a fully-functional robot, with the tools to support advanced introspecting, debugging and plotting.

Ultimately, the decision to choose Ubuntu as Spiro's OS was based on its responsiveness, lightweight nature and high degree of security.

## What can Spiro do?

Spiro is an incredibly versatile customer service robot for the hospitality industry, which shows advanced abilities both in terms of its processing and its physical versatility.

Physically, Spiro has the ability to move its head in all directions, has twenty pre-set expressions with which to interact with those around it, and an interactive touch screen, providing intelligent communication with those who approach it. Spiro also has a 360-degree range of sound source positioning to further optimise human-machine communication, hand-gesture recognition, general motion detection, obstacle detection and avoidance, speech processing and route planning.



Spiro in a bank in Shanxi, China

Potential applications for Spiro include:

- **As a concierge:** Spiro can be used in hotels to greet and serve guests and is currently in use in Zhotel in Hangzhou, China. Spiro has motion sensors, as well as face detection to let them know when there are people around that they should attend to.

- **To provide 'VIP services':** Spiro is ideal for providing guests with a VIP experience. One such example could be its use in banks to help allocate VIP customers to the corresponding desks.

- **To provide service information and general help:** Using voice recognition, analysis and synthesis capabilities, Spiro can answer the questions of a customer and guests in a wide range of hospitality scenarios.

- **Touring and guiding:** Spiro can be used in exhibition halls to provide routing, touring and guiding services, and is capable of avoiding any obstacles in its way.

"Ubuntu was the perfect fit for Spiro...the adaptability, security and resilience of Ubuntu has made it the ultimate OS for the new age of autonomous robotics. This, combined with the support provided by the Canonical team has helped us on our way to providing a best-in-class robot throughout both the hospitality and wider customer service industries."

George Soon, Product Director at RobotCheers

For more information on Ubuntu and Robotics, please visit **ubuntu.com/internet-of-things/robotics**

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