



# Research

## Research the future

Research institutions around the world rely on smart, collaborative robots from Rethink Robotics. The Sawyer SDK provides an outstanding development tool, offering compatibility with ROS and other state-of-the-art Open Source robotics tools. Sawyer SDK includes advanced features that allow users to visualize and control how the robot interacts with its environment.

## Give researchers the tools they need

Rethink Robotics provides the same affordable robots seen on factory floors – a complete solution that is ready for research projects in just hours. Sawyer SDK integrates with Gazebo Simulator, which creates a simulated world that will visualize the robot and its contact with the environment, allowing researchers to run and test code in the simulation before running it on the robot. In addition, Sawyer SDK includes a new Motion Interface that allows researchers to program the robot using Cartesian waypoints and lowering the barriers to motion planning for programmers without a robotics background.

## Research nearly any topic

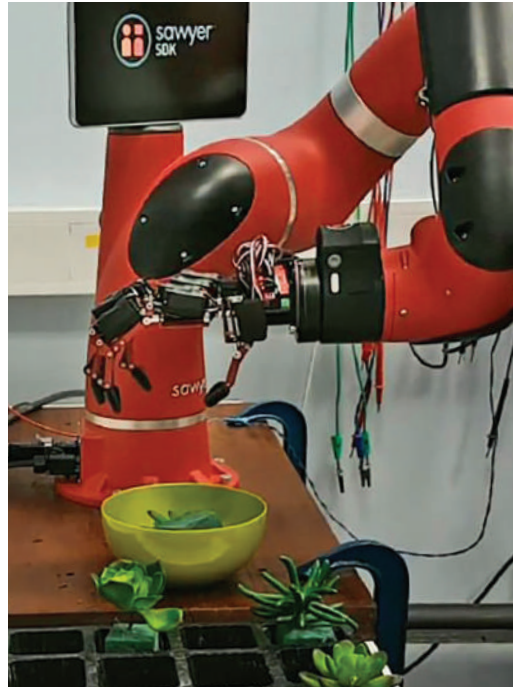
Laboratories, universities and R&D centers in more than 25 countries use these safe, easy-to-use robots as their research platforms. These robots can easily run 24/7 in a lab or research center. Research ranges from motion planning to artificial intelligence and deep learning, to machine vision, mechatronics, manipulation and more.

## Publish your findings sooner

With the Sawyer SDK, you can customize your research and publish faster. Our Sawyer SDK Wiki provides online tutorials, installation guides, and much more to help you accelerate discoveries and submit your work faster for publication. Our versatile robots are featured in hundreds of white papers, posters, journals and conferences around the world.

## Join our worldwide community

Rethink Robotics' online User Forum connects you to hundreds of educators and researchers globally who post their experiences and insights in this online community. From sharing best practices to sparking international collaboration, the Rethink Robotics' User Forum helps you get the most from your collaborative robot.



## Research

Colleges and universities use Rethink robots to research a broad range of subjects, including:

- Artificial intelligence and deep learning
- Human-robot interaction
- Machine learning
- Machine vision
- Mechatronics and end effectors
- Planning and manipulation
- Manufacturing and automation
- Haptics

### Robot Specifications

<b>Pay Load</b>	4 kg
<b>Max Reach</b>	1260 mm
<b>Gantry Reach</b>	900 mm
<b>Task Repeatability</b>	±0.1 mm
<b>Typical Tool Speed</b>	1.5 m/s
<b>Degrees of Freedom</b>	7
<b>Operating Temperature</b>	0°C - 40°C, 80% Relative Humidity
<b>Joint Ranges</b>	J0 - J3 = 350 degrees, J4 - J5 = 340 degrees, J6 = 540 degrees

### Robot Specifications

<b>Robot Weight</b>	19 kg
<b>Power Requirements</b>	100-240 VAC, 47-63 Hz, 4A Max
<b>I/O Ports (Controller)</b>	8 digital in / 8 digital out
<b>Communication</b>	Modbus TCP, TCP/IP
<b>Safety Circuit</b>	PLd Category 3
<b>IP Class</b>	54
<b>Collaborative Standards</b>	ISO 10218-1:2011
<b>I/O End of Arm</b>	4 digital in / 4 digital out / 2 analog in / 24 VDC 2A, ClickSmart Plate Required



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