Microsoft Robotics Studio – Community Technical Preview

Making Robotics Easier.

Microsoft® Robotics Studio makes it easy for hobbyist, academic and commercial developers to create robotic applications for a variety of hardware platforms. The Microsoft Robotics Studio software development kit includes a lightweight services-oriented runtime, a set of visual authoring and simulation tools, as well as tutorials and sample code to help you get started.

End-to-End Development Platform
The Microsoft Robotics Studio software development kit enables developers to create services for a wide-variety of robot hardware.

- **Non-programmers can easily create robot applications using a visual programming environment.** The Visual Programming Language enables anyone to create and debug robotics programs very easily. Just drag and drop blocks that represent services, and connect them up. You can even take a collection of connected blocks and reuse them as a single block elsewhere in your program.

- **Simulate robotics applications in 3D physics-based virtual environments.** Simulate your robotics applications using realistic 3D simulated models. The Microsoft Robotics Studio simulation tool integrates in the PhysX® engine from AGEIA®, a pioneer in hardware-accelerated physics, enabling real-world physics simulation for robot models. PhysX simulations can also be accelerated using AGEIA hardware.

- **Interact with robots using Windows or Web-based interfaces.** Create applications that enable you monitor or control a robot remotely using a Web-browser and send it commands using Jscript; or control your robots using MSN® Live Messenger. Mount cameras on the robots and control them via IM to survey a remote location.

With Microsoft Robotics Studio you can interact with robots through MSN Live Messenger.
Lightweight services-oriented runtime
Microsoft Robotics Studio includes a .NET-based services-oriented runtime.

- **Makes asynchronous programming simple.** The Concurrency and Coordination Runtime (CCR), makes it simple to write programs to handle asynchronous input from multiple robotics sensors and output to motors and actuators.
- **Real-time monitoring of robotic sensors and response to motors and actuators.** The services, message-based architecture makes it simple to access, and to respond to a robot’s state, using a Web-browser or Windows-based application.
- **Reuse modular services using a composable model.** Build high-level functions using simple components, providing for reusability of code modules as well as better reliability and replaceability. For instance a lower-level sensor service could be integrated into a navigation service.

Scalable and extensible platform
The Microsoft Robotics Studio programming model can be applied for a variety of robot hardware platforms, enabling users to transfer their skills across platforms. The programming interfaces can be used to develop applications for robots using 8, 16 or 32-bit processors, either single or multi-core.

- **Easily extend Microsoft Robotics Studio functionality.** Third parties can extend the functionality of Microsoft Robotics Studio by providing additional libraries and services. Hardware or software vendors can make their products easily compatible with Microsoft Robotics Studio.
- **Supports both remotely connected (PC-based) and robot-based (autonomous) application scenarios.** Remotely connected scenarios enable you to communicate from a PC to the robot through a serial port, Bluetooth®, 802.11, or RF. Programs can also execute natively on PC-based robots running Windows XP, enabling fully autonomous operation.
- **Develop using a wide range of programming languages.** With Microsoft Robotics Studio, robotics applications can be developed using a selection of programming languages, including those in Microsoft Visual Studio® and Microsoft Visual Studio Express languages (C# and VB.NET), as well as Jscript and Microsoft Iron Python. Third-party languages that support the Microsoft Robotics Studio services-based architecture are also supported.

For More Information
Visit the Microsoft Robotics Studio Web site at microsoft.com/robotics to learn more about Microsoft Robotics Studio.

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Systems Requirements

To use Microsoft Visual Programming Language included in our Community Technical Preview Release, you MUST install the specific Microsoft .Net Framework 3.0 CTP available as an additional download in the section “Files in this Download.”

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