Robot operating system

Science, Computer Science

ROS (Robot Operating System) is a framework for robot software development, providing operating system-like functionality on top of a heterogenous computer cluster. ROS was originally developed in 2007 under the name switchyard by the StanfordArtificial IntelligenceLaboratory in support of the Stanford AI Robot (STAIR[1]) project. As of 2008, development continues primarily at Willow Garage, a robotics research institute/incubator, with more than twenty institutions collaborating in a federated development model [1][2].

ROS provides standard operating system services such as hardware abstraction, low-level device control, implementation of commonly-used functionality, message-passing between processes, and package management. It is based on a graph architecture where processing takes place in nodes that may receive, post and multiplex sensor, control, state, planning, actuator and other messages. The library is geared towards a Unix-like system (Ubuntu Linux is listed as 'supported' while other variants such as Fedora and Mac OS X are considered 'experimental') but is intended to be cross-platform.

At present Windows is listed as having 'partial functionality' [3]. ROS has two basic " sides": The operating system side ros as described above and ros-pkg, a suite of user contributed packages (organized into sets called stacks) that implement functionality such as simultaneous localization and mapping, planning, perception, simulation etc. ROS is released under the terms of the BSD license, and is open source software. It is free for commercial and research use. The ros-pkg contributed packages are licensed under a variety of open source licenses.