RoboJDE™

Java™-enabled Robotics Software Development Environment

Introduction

The RoboJDE™ Java™-enabled robotics software development environment opens the door to modern, object oriented software development for educational and hobby robotics projects.

True Java Programming, Optimized for Robotics

Unlike many other Java robotics products, RoboJDE supports the full Java programming language without imposing awkward limitations or requiring the use of non-standard Java programming practices. RoboJDE is feature rich, supports the best Java programming practices, and is optimized to minimize executable size and maximize execution speed.

Easy to Use

No longer do students and hobbyists have to master an assortment of disparate tools before they can start programming their robotics projects. The RoboJDE development environment integrates source code editing, compiling, linking, loading, execution, monitoring and debugging into a single easy to use user interface.

Rich Class Library

RoboJDE's Java class library includes dozens of classes, including basic Java classes, robotics specific classes, robotics controller support classes, sensor support classes, and effector support classes, to provide an excellent foundation for all robotics projects.

Many Example Programs

RoboJDE includes many example programs demonstrating everything from using individual sensors, such as the CMUcam, to programming entire robot applications, such as a mini-sumo robot, a balancing robot, and a behavior-based robot.

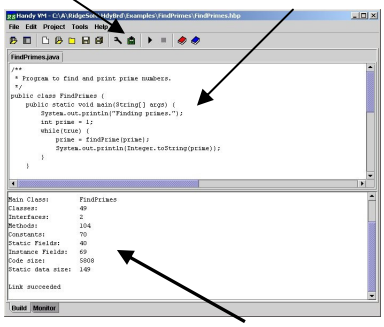
Program Mini-Sumo or Botball Robots

RoboJDE includes an example mini-sumo application that works with either RidgeSoft's IntelliBrain™ robotics controller or the Sumo11 robotics controller.

Additionally, RoboJDE can be used to program robots for the NASA sponsored Botball educational robotics program (www.botball.org) which is based on the Handy Board.

One-click Build and Load

Source Code Editor



Build Output

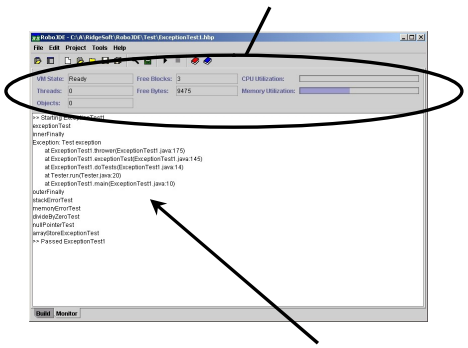
Easy Development

Building and downloading software to the robot controller is as easy as one mouse-click using RoboJDE.

Rapid Debugging

Because Java provides strong compile time error checking and rigorous run-time error checking, system crashes and hard to find bugs are virtually eliminated. When a run-time error occurs, RoboJDE provides a stack trace, complete with source file names and line numbers, that pinpoint the source of the error, saving countless hours of debugging time.

Virtual Machine Status



Line-numbered Stack Traces

Supports Multiple Robotics Controllers

RoboJDE supports the following robotics controllers:

- IntelliBrain controller (www.ridgesoft.com)
- MIT Handy Board (www.handyboard.com)
- Sumo11 w/Expansion Board (www.1sorc.com)

IntelliBrain and RoboJDE, A Perfect Combination

The IntelliBrain robotics controller was designed specifically with RoboJDE in mind. Of the robotics controllers RoboJDE supports, IntelliBrain provides the fastest execution – approximately 10 times faster than the Handy Board or Sumo11, and the most memory – approximately 10 times more memory available for applications than on the Handy Board or Sumo11. In addition, the IntelliBrain has built-in support for the CMUcam and I^2C devices allowing it to interface to sensors and effectors the other controls don't support. Finally, the IntelliBrain has a high speed host port, capable of 115.2 Kbps, so even the largest applications can be download quickly.

Sensor and Effector Support

- analog inputs
- CMUcam[1]
- DC motors
- Devantech CMPS03 magnetic compass
- Devantech MD03[1] & MD22[1] motor drivers
- Devantech SRF04 & SRF08[1] sonar range finders
- Devantech SP03[1] speech synthesizer
- digital inputs
- digital outputs
- Fairchild QRB1134 infrared photoreflectors
- LCD displays
- LEDs
- I^2C devices[1]
- infrared (TV) remote controls
- push buttons
- Servo motors
- shaft encoders – single sensor and quadrature
- Sharp GP2D12, GP2Y0A02, GP2Y0A21 analog infrared range finders
- speakers and buzzers
- thumbwheels

Building Blocks for Intelligence

- behavior arbitration
- PID control
- vector arithmetic
- sensor input smoothing
- multi-threading and thread synchronization
- object oriented programming with inheritance and interfaces
- floating point arithmetic and Math class
- run-time error checking
- exception handling with line numbered stack traces
- memory management with real-time compatible garbage collection

[1] Only supported in conjunction with IntelliBrain controller

Licensing

RoboJDE Lite is licensed free of charge, but limits the size of the application which may be executed on the robotics controller.

To unlock the full capabilities of RoboJDE, full licenses may be purchased on a per user basis or per robotics controller basis. Purchasing a license and installing the associated key(s) on development workstations unlocks the full capability of RoboJDE.

Per user licensing allows a licensed user to use the full RoboJDE software on any number of workstations or robotics controllers owned by the licensee.

Per controller licensing allows any user to use the full RoboJDE software on any number of the licensee's workstations in conjunction with licensed robotics controllers.

A full license for RoboJDE is included with each IntelliBrain robotics controller.

PC Requirements

- Windows 98/Me/2000/XP
- 50 Mbytes available disk space
- 128 Mbytes RAM
- RS232 serial port

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