SerialPortPage 01/28/13

Isaac O'Bryant

Problem Definition

There is often a need to have remote access to devices and controllers. For accessibility, using a standard interface that can be easily adapted into new products would be ideal.

The solution explored in this project uses a web page on a Tomcat server with drivers capable of sending protocol to the serial port written in C/C++. This allows remote connectivity and uses a conventional interface that provides a platform easily integrated into other projects.

A RaspberryPi board with builtin WiFi and Linux OS provides a compact environment for development and implementation while leaving room for upgrades later.

Solution Specifications

- Drivers written in C/C++ control the connection to the serial port and opens server socket on machine.
- By servicing the driver, the signal can be modified to communicate with different devices.
- HTML5 UI sends string commands to serial port using sockets on *localhost*, and can be serviced.
- Connect over Internet by publishing page on local tomcat server.

Potential Applications

- By changing the serial port signal and voltage, it should be possible to remotely communicate and control many existing devices.

Competitive Analysis

Many products have their own protocol to address this issue that differs per application. This project attempts to provide a standard method that can be implemented for wide range of purposes at low cost.

Future Improvement Ideas

- Institute a “heartbeat” over socket to ensure synchronization.
- Use UTP packets instead of opening a data stream over socket.
- Two-way communication.
- Refine HTML page.