CSC714 Real-Time Computer Systems

Group 4 Project Progress

Remote Controller for Lego Mindstorm RCX

Group Member

Haihui Huang(hhuang3@eos.ncsu.edu)

Xuejun Sun(xsun4@unity.ncsu.edu)

Issues solved previously: (Link to Report1)(Link to Report2)

- **Haihui&Xuejun: Downloaded and Installed LNPD under Linux 2.4.18**
  We downloaded and compiled LNPD code successfully. Though initially we had some difficulties to run the LNPD due to the limitation of access priviledges because LNPD will try to change some UART settings.
- **Haihui: Found and fixed a bug in LNPD:**
  It seems that LNPD can not configure 16550A UART chip correctly. In the original code, it recommends executing "setserial /dev/ttyS0 uart 16450" on the machine with 16550A UART chip. So later when LNPD initializes the TTY connection with RCX, it will treat 16550A chip as 16450 chip. It does NOT work with machines in the OS lab which have 16550A UART chips inside. It seems that we can skip this step in the LNPD code.
- **Haihui: changed project webpages with frames.**
  Now the project webpage seems more organized.

- **Haihui&Xuejun: Discussed the communication packet protocol**
  We discussed the control protocol between RCX and PC.
- **Xuejun: completed the design of legOS program for receiving control commands and sending current rover status**
- **Xuejun: implemented the modules for motor control, command receiving and tested motor control module**
- **Haihui &Xuejun: Completed the design of control communication protocol**
- **Haihui: Implemented a prototype Java Swing GUI for the Remote Controller**
  This prototype JAVA Swing GUI program will let you specify the IP address and port number of the host which runs the LNPD and connect to it via TCP/IP.

Issues solved Lately:

- **Haihui: Improved the Java GUI and added more functionalities and graphics for animation.**

  - The latest GUI will let you click on the buttoms or use 4 arrow keys to control the Lego Rover after you connect to the host running LNPD daemon..

- Please see the snapshot of the latest GUI below:

- **Xuejun: Improved the reactor program running inside RCX.**
- **Haihui & Xuejun: Get the Java GUI and Lego program work together seamlessly via LNPD and LNP addressing mode.**

  - Now with the Java GUI application, we can control the RCX remotely very well on any machine and any OS platform.

Future Work:

- **Haihui: Improve the Java GUI performance and feedback**

  - Due to the relative slowness of Java program, adding too much graphics into the GUI seems slowing down the interactioin between remote control program and RCX. We will experiment more to find a balance point.

- **Haihui & Xuejun: Feasibility study about the WebCam project**
  After we finished the remote control project, we have laid a solid foundation for the WebCam project and believe that **the WebCam project is totally feasible**. However due to the limited time schedule, we are not be able to get into the WebCam project by the due day of project report. We may demo the prototype of WebCam by the scheduled demo day.