



Contribution ID: 109

Type: not specified

Factory monitoring with Pylons, XML-RPC and SVG

Monday 3 July 2006 12:10 (30 minutes)

I write Python applications for a company specialising in industrial factory monitoring and scheduling. Most recently we have developed a web application for remote monitoring, sending text message alarms when machine hoppers run low. We're using the Pylons web framework, Myghty templating, XML-RPC and SimPy simulation. The dynamic graphical display of the factory is written in SVG, for Firefox (v1.5) web browser.

We will look at interesting issues such as

- * the choice of framework and templating system,
- * the importance of decoupling threads using a log file and XML-RPC,
- * historical correction of data,
- * and why we needed simulation.

Summary

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We provide a web-based factory monitoring system for the plastics industry. Machine data is captured by an embedded web server in a box connected to up to four machines in a factory. A Pylons web server polls the box for new data every 15 seconds. A factory model is updated with the new data, which is displayed in dynamic, graphical web pages on demand.

Interesting issues

- Choice of Pylons vs. other web frameworks.
- Choice of Myghty vs. other templating systems.
- Use of SVG objects for the factory mimic (graphical picture), showing the status of each machine, with dynamically created alarms.
- Decoupling input, analysis and display by the use of a time-adjusted log file.
- Use of XML-RPC for decoupling threads, so that one thread writes data for another, using the Pylons framework xmlrpc server.
- Use of XML-RPC to suck data out of standalone PCs running Visual Basic.
- Historical correction of data by entering missing log lines in the past, followed by reprocessing the log file to give a new current status.
- Use of wireless iPaq PDA for entering scrap and downtime reasons.
- Use of threading: stopping/starting/restarting.
- The need for simulation, and the simulation model.

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Session Classification: Python in Science

Track Classification: Python in Science