

The LearnNet Project

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After three years of development, the BMBF project "LearnNet" will finish this year. After successful evaluation of the common platform for learning and experimentation via Internet, the network of on-line experiments and servers with various courses will be available to the students from all over Germany and the world to support them to study control theory and process automation. Our contributions to this project are:

- **Design and implementation of a virtual laboratory for on-line control of the inverted pendulum/gantry crane system** - For that purpose, a novel architecture of the virtual lab was developed. Several new components, including xPC Target Server for real-time operation of the experiment and communication with the client, a Control Applet for interfacing to the lab, Multimedia Reflector for video/sound streaming and an Analyser Applet for evaluation of the experimental data, provide a basic framework for future labs.
- **Development of the reservation system** - By means of this database system, the students can schedule the date and the length of their experiments by themselves.
- **Generation of several on-line accessible course materials (fuzzy control, state space control, etc.)**

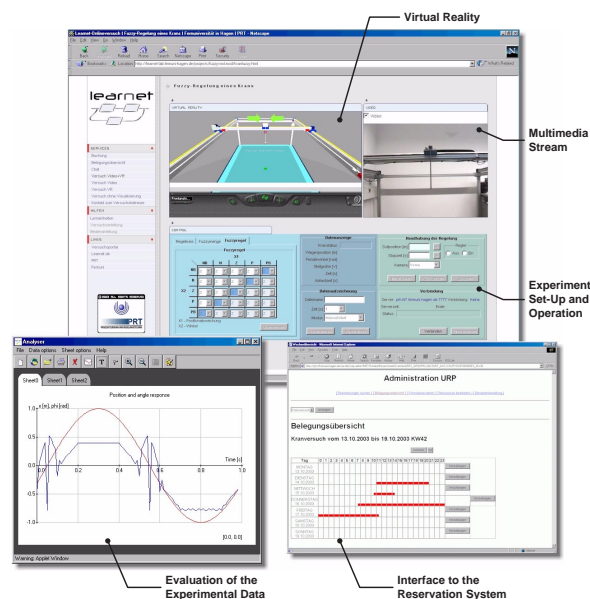


Figure 1: Interface to the Virtual Lab with Analyser and Reservation system

- [1] <http://www.learnnet.de>
- [2] H. Hoyer, M. Gerke, Ch. Röhrig, A. Bischoff, I. Masar and I. Ivanov: Reale Systeme im 'virtuellen Labor'/Real Systems in 'Virtual Laboratory', Automatisierungstechnik (at), Volume 11, 2003
- [3] H. Hoyer, M. Gerke, I. Masar, I. Ivanov, C. Röhrig and A. Bischoff: Virtual Laboratory for Real-Time Control of Inverted Pendulum/Gantry Crane, 11th IEEE Mediterranean Conference on Control and Automation, MED'03, Rhodes, Greece, June 2003