A REVIEW ON DEVELOPMENT OF LabVIEW BASED REMOTE MONITORING SYSTEM

Presented By : Ms. Shital Patil
M.E (ESC) – 3rd Semester
Department of Computer Science & Engineering
G. H.Raisoni College of Engineering,
Nagpur,Maharashtra,India.

Guide: Dr. D. V. Padole
Professor
Department of Electronics Engineering
G.H.Raisoni College Of Engineering
Nagpur,Maharashtra,India

Abstract :- In recent year’s researcher and research scholars are working on different project in workroom or the laboratories. There are many instruments and industry setup need to study for better understanding of the system but which is not feasible to set as a test bed for study purpose only. Every time it is also not possible for taking research scholars for industry visit to gain the in depth working result and experience. Solution to this issue can be solved using the remote administration and the monitoring scheme using network medium of any type like wired or wireless. LabVIEW, SCADA like tools and platform provides a support for remote controlling and the monitoring of equipment.

Keywords: LabVIEW; Remote Laboratory; LabVIEW Client.

I. INTRODUCTION

In the last few years Laboratories, which are found in all engineering and science programs, are an essential part of the education experience. Not only do laboratories demonstrate course concepts and ideas, but they also bring the course theory alive so students can see how unexpected events and natural phenomena affect real-world measurements and control algorithms. However, equipping a laboratory is a major expense and its maintenance can be difficult. Teaching assistants are required to set up the laboratory, instruct in the laboratory, and grade laboratory reports. These time-consuming and costly tasks result in relatively low laboratory equipment usage, especially considering that laboratories are available only when equipment and teaching assistants are both available.

A remote laboratory is defined as a computer-controlled laboratory that can be accessed and controlled externally over some communication medium. A remote laboratory is an experiment, demonstration, or process running locally on a LabVIEW platform but with the ability to be monitored and controlled over the Internet from within a Web browser.

The remote laboratory server can be an experiment connected to a computer through a standard interface (DAQ, GPIB, serial, parallel, etc) and with the host computer connected to the Internet. The client can be any computer connected to the Internet running a simple browser. Once connected, the client will see the same front panel as the local host and also have the same program functionality.

Apart from the new LabVIEW Remote Panels tool, National Instruments had previously developed tools to provide Internet-based measurement and automation solutions, and our technologies have been used extensively to create innovative remote laboratories very successfully. These laboratories – on the cutting edge of remote laboratories – highlight some of the vast possibilities achievable with the incorporation of National Instruments Internet technologies.

The implementations with FPGA real time environment and their real time motion control with brushless DC motor. and their setup with remote experiment is shown in paper [1]. A remote laboratory may be used for instructional purposes.
in a variety of educational laboratory and remote control
domains; for example, in control engineering courses.
Remote laboratories have been developed for motion control
in mechatronics, and control of DC motors. are also
developed for remote laboratory and remote experimentation.[8].

II. RELATED WORK

As a development of remote laboratory need to design a
system to work as a middle ware between laboratory and PC
LabVIEW client system which can be utilized at different
application of laboratory.

Paper [1] presents the concepts of user interface and the
structure of remote laboratory for the various motion control
has been presented. Their are two technologies for remote
connection of the web-client and control of the experimental
workbench are proven feasible to be realized. LabVIEW
web services and remote front panels.

Also In this paper the multi-panel GUI consists of three
panels which provide the functionality for setting up
,execution and diagnostics of the control experiments.

Paper [2] shows the hardware components use to construct a
universal test bench for motion control. To manipulate many
applications for their precise control in industry, the
motorized linear stage is used in laboratory test bench. This
paper shows the novel comprehensive flexible motion
platform for remote experimentations with brushless
DC/Permanent Magnet Synchronous motors and drivers,
single/multiple axes flexible mechanical system. In this
paper the novels software tools for communication
diagnostics ,control and data acquisition based on LabVIEW
virtual instruments, have been also described.

Paper [3] shows the concepts of remote laboratory system
and discusses the advance enhancements of the system. This
remote laboratory, exposes a set of physical plants for
recent use, with the only requirement at the client side
being a computer and an internet browser. This laboratory
environment gives the remote users to control a real world
physical plant. The first version of remote laboratory is used
to control three electromechanical systems. The system
consists of seven servers that means it consists various type
of server like log in server, webcam server etc..

Paper [4] shows the concept of hand’s on laboratories terms
such as e-learning ,distance learning, web based lab etc. The
main aim of this paper is that it focus on the remote
prototype laboratory for frequency response of a
temperature control system is designed successfully. For the
teaching and the learning process of the control system, the
most point of web based lab is that it has more suitability
for that reason the remote user can access the host from
anywhere in the local area network. the result obtained from
the experiment do not give the satisfactory results in terms
of accuracy. So from bode diagram it can possible to
compare the accuracy between remote and the conventional
lab.

Paper [5] shows the concept of NetLab for advance
interaction with real equipment over the internet. This
remote laboratory is not same as that of earlier it shows the
advance example in south Australia. also it showcase an
better way designed GUI which take at the starting of
NetLab development. It is an interactive multiuser learning
environment. NetLab has its own server which is connected
on unique side to the Internet allowing users to access the
remote laboratory.

NetLab GUI is the most actively part of this RL. From the
beginning of its development it has been designed with the
aim of giving students the feeling of working in a real
laboratory .A well designed GUI is an most important
contributor to the quality of learning experience in remote
laboratories.
III. PROPOSED WORK

Proposed system is aimed at design and development of remote laboratory activities monitoring and controlling system. For the proof of concept proposed system will be having a prototype industry or laboratory setup and web based control unit where user can communicate with the remote laboratory setup and can monitor the activities through capturing devices.

IV. CONCLUSION

The different web based and advance enhancement of remote laboratories are reviewed through this paper .after reviewing the different technique which are used in the industry and automation system for remote laboratories .from referred paper a hand’s on experiment has the wide scope in future.

V. REFERENCES


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