WEB BASED EXPERIMENTATION By Sarat Paluri College of Engineering Southern University

MOTIVATION

- Students interest towards web related information
- > My interest towards networking
- Easy way to get things done

CONTENTS

- Introduction
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INTRODUCTION

- Remote Lab Experiment on "Stress, Strain and Vibration Analysis of a Cantilever Beam System".
- Structure of Remote Laboratory
- Multiple Users Remote Access

EXPERIMENTATION SETUP



Fig. 1 Experimental Set up of the Cantilever Beam

SYSTEM ARCHITECTURE



Fig. 2 Remote Laboratory Block Scheme Using Data Acquisition Card[Modified from S.Uran, D.Hercog and K.Jezernik, Remote Lab Exp. RC Oscillator]

Server Operation (Web Publishing Tool) :

• Step 1 : Creating & loading the VI

Select vi and viewing options	. ·
VI name	Preview
final_project.vi	Title of Web Page
Viewing Mode	Text that is going to be displayed before the
Embedded	
Embeds the front panel of the VI so clients can view and control the front panel remotely	
Request control when connection is established	
💿 Snapshot	To a share to a first the first to the share 10
Displays a static image of the front panel in a browser test	Text that is going to be displayed after the VI_
Monitor	
Displays a snapshot that updates continuously	
0 Seconds between updates	
	Preview in Browser
	Start Web Server

Step 2 : Entering – Document title, header & footer

	Preview Stress,Strain and Vibration Analysis
	Experiment
*	
+	@College of Engineering.Southern University
*	
1200	Preview in Browser
	Start Web Server
Nexts	

Client Operation :

- LabVIEW Run Time Engine
- Controller Parameters & send Experimental Results through Email
- > Application Control:
 - Request Control
 - Release Control

 Step 3 : Start Web Server, Obtain the URL & Save to Disk

Save the New Web Page		-
Select a destination directory and filename (excluding the .html extension) for the Web page. Local Directory to save the Web page		Preview Stress,Strain and Vibration Analysis Experiment
C:\Program Files (x86)\National Instruments\LabVIEW 2009\ www		
Filename	-	@College of Engineering.Southern University
Filename final_project	.html	@College of Engineering.Southern University
Filename final_project URL	html	College of Engineering Southern University
Filename final_project URL http://192.168.1.102/final_project.html	.html	©College of Engineering Southern University Preview in Browser

SIMULATION AND GRAPHICAL INTERPRETATION



DEVELOPMENT OF IT INFRASTRUCTURE

- Communication Infrastructure :
 - Experimental Apparatus
 - Workstation Servers
 - Remote Laboratory Server
- Network Axis Camera to View
- Select, View and Run the equipment



CONCLUSION

- > Remotely accessing the experiment
- Crystal Clear Understanding with different options

Possible Extensions Of Ongoing Work

Steering robots in the Mechatronics Laboratory

Remote steering of parallel computations and concurrent visualization Pathlines in CFD data Molecular Dynamics simulations



Ongoing work

CFD data: Pre-computing pathlines on parallel machines • Pathlines for the full simulation time (~5700 CFD time steps) pre-computed to avoid disk access limitation.

• ~0.5 million pathlines beginnning from points of a uniform grid computed in ~2.64 hrs on 64 CPU of LONI machine Queenbee.

• Reordering of computed pathlines to have all time steps of an individual pathline in a single block completed in 0.32 hrs on 64 CPU of Queenbee.

 Modification of the visualization code to read pre-computed pathlines based on user supplied seed points/surfaces.



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Thank You For Your Attention

