DOWNLOAD PDF LABVIEW PROJECTS FOR STUDENTS

Chapter 1 : myDAQ Projects for Engineering Students - National Instruments

45+ LabVIEW Projects for Engineering Students LabVIEW stands for Laboratory Virtual Instrument Engineering Workbench, which is a software development environment for creating custom applications that are able to monitor and control the real-time data in engineering and science field applications.

Getting Started with a Template or Sample Project 1. One or more templates are often used in combination to build real-world systems. These templates provide common architectures using well-adopted design patterns that you can modify to build a system. Simple State Machine This template facilitates defining the execution sequence for sections of code. This particular implementation often is referred to as a Moore machine, which determines the next state based on decisions made in the current state. The design of this template makes it easy to insert new sections of code, remove sections of code, or change the order in which sections execute without making major modifications to the structure of the application. View Webcast Queued Message Handler This template facilitates multiple sections of code running in parallel and sending data between them. Each section of code represents a process, such as acquiring data, and is designed similarly to a state machine. The separation of these components enables a responsive user interface and the ability to continuously log data while other messages are executing. This framework was designed to address common development scenarios that can lead to significant duplication of code when extending functionality or adding processes. Back to Top 2. Desktop Sample Projects Desktop sample projects illustrate the use of one or more templates in an actual application. These projects fulfill the most common requirements of desktop-based measurement applications, including responsive user interfaces, asynchronous analysis, data-logging, user dialogs, error handling, and multiple independent tasks. Finite Measurement The Finite Measurement sample project acquires a single measurement and provides options for exporting the measurement to file. Continuous Measurement and Logging The Continuous Measurement and Logging sample project acquires measurements continuously and logs them to disk. It executes five loops in parallel to ensure that various tasks can be executed at the same time while responding to and en-queueing user requests. Feedback Evaporative Cooler The Feedback Evaporative Cooler sample project is built using the Actor Framework template and implements an evaporative cooler with hot-swappable hardware, controllers, and user interfaces. The sample project is made up of multiple independently-running VIs, called actors, that represent the user interface, the cooler, its fans, and its water level. Each actor has the ability to pass command-like messages to, and receive such messages from, related actors. The architecture supports expansion for statically or dynamically including more actors. For the HMI client application, it implements event-based updates to the user interfaces and dynamic loading of subpanels to demonstrate an efficient and responsive user interface architecture. Back to Top 3. As a result, many embedded applications require processes dedicated to system status monitoring, error handling and watchdog timers. These sample projects also illustrate best practices for data communication, network connectivity, control routines, data logging, and more. Rather than running the control algorithm in software, the control is implemented in the FPGA fabric, enabling your control loops to achieve rates faster than 10 kHz with minimal jitter. The FPGA VI also contains safety logic that immediately puts any outputs into a safe state upon a critical error or real-time software failure for maximum reliability. This sample project does not use the FPGA hardware, but leverages the deterministic, real-time processor for control. This sample project is designed to run headless, or it can connect to the optional user interface that is provided. It includes a Windows-based user interface that generates user-defined sequences, deploys them to CompactRIO, and monitors the sequence engine status. The user interface uses dynamic loading of subpanels to demonstrate an efficient and responsive user interface architecture. This sample project includes analog data acquisition and logs the acquired data to disk on the real-time system when a trigger condition is met. Back to Top 4. The Create Project dialog for a custom template or sample project can be changed to include additional items that can script the creation of custom code. For more information on how to create and add your own items to this dialog, click here. Back to Top 5. The documentation provided in each project enumerates the concepts that users need to be familiar with. In addition, the documentation on the block diagram clearly indicates where to

add or modify code in blue colored comments.

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Chapter 2 : NI LabVIEW Student Edition - National Instruments

A lot of Engineering projects and tutorials for the students to help them in their final year projects and semester projects.

This comprehensive software integrates several engineering tools to build control systems in dramatically less time for a wide range of applications. LabVIEW based projects allow to acquire, analyze, control and test various control applications ranging from small to large systems. The electrical projects for students can easily be developed with this software along with hardware modules. Therefore, this article is intended to give some of these LabVIEW based electrical projects in different application areas. Smart Fan Regulation By Soft Switching Technique using LabView Energy conservation is the main consideration in homes and industries for efficient utilization of electrical energy and also for the reduction of electricity bills. This proposed project reduces the power consumption of the fans by regulating the fans in a smart way thereby, reducing the overall power consumption. This is a new regulation technique of the fans which are connected either in series or parallel based on the humidity or temperature levels in homes. Smart Fan Regulation By Soft Switching Technique using LabView When the temperature is low and humidity level is high, then the fans operate in series; the fans operates in parallel when the temperature is high amd humidity is low. Therefore, in series connection, the power consumption of the fans is half to that connected in parallel; thus, the power consumption can be eventually reduced and the speed of the fan can also be controlled. The LabView Programming is implemented such that it monitors the sensors and sends the control signals to a hardware control unit wherein the relays connected to the loads, which are switched accordingly. Home Automation with Energy Gentrification This project is developed to provide highly reliable automation in homes and industries and also to solve the energy scarcity problem. As one of the projects for electrical engineering students , this system is capable of controlling the home appliances through a centralized and low-cost automation system. Home appliances like fans, lights, and other equipments are connected through a relay module on the DAQ board. Therefore, an automatic railway-crossing-gate controller is designed to prevent accidents at the level crossings using sensors. This control system is integrated with the LabVIEW software, microcontroller based data acquisition system and sensors like proximity and IR sensors. Two proximity sensors are placed on both sides of the gate of the level crossing gate with a specified distance. An IR sensor is placed in front of the gate for detecting any obstacles on railway track. Thus, this project ensures both track and gate security system. When the train departs, the gate gets opened by the signal from the second proximity sensor. In case of more than one emergency vehicle at different junctions this system prioritizes the vehicles upon intelligent programming. This system uses data acquisition module for every junction to which different IR sensors are connected. Wireless Sensors Based Traffic Light System This project also provides the preemption of traffic system when the emergency vehicles approaches the signal with emergency sensing equipments at the junctions. And, the functionality of the control system is to monitor data from various sensors and check whether the values are maintained within the set limits or not. LabVIEW data acquisition hardware collects the different parameter values and their status through connected sensors to it. Depending on the program in the LabVIEW, it sends the control signals to the remote area wherein all the equipments are connected. Zigbee module is attached to this project for achieving remote control operation. Thus, centralized control of the industrial system is reliably achieved with this project. Hope that you have a basic idea of LabVIEW projects, if not, you can contact us for developing these projects with hands on experience of both hardware and software assistance by commenting below. He has 8 years of experience in Customer Support, Operations and Administration.

Chapter 3 : Engineering Projects with NI LabVIEWâ„¢ and Vernier

Labview Projects. Labview Projects is a graphical programming language which uses various icons in place of line of text to create programs. Labview is an acronym of a laboratory virtual instrument engineering work bench we offer labview projects for ECE, and EEE students to carry out their academic projects.

Students perform a loopback test with a sine wave they generate. By adjusting the sampling rate and observing how this affects the acquired signal they learn about aliasing and the importance of selecting the correct sampling rate for an application. This project also introduces programming through a pre-built Virtual Instrument. Students learn about state diagrams and how these are implemented in state machines in a Virtual Instrument. The challenge exercise has students add logic for a walk timer to their code. Filtering and Temperature Learn how to filter a signal in hardware and software then create a digital thermometer. In this project students acquire temperature data using a thermistor and take a Fourier transform of that data. They then implement a physical low-pass filter and a low-pass filter in software and observe the effects of each of these on the signal. Finally, students can take the data acquired from the thermistor to create a digital thermometer displaying temperature. Automatic Headlight Controller Learn about photocells by building an automatic headlight controller. Students measure the change in resistance of a photocell and see how this changes with light exposure, using a pre-built Virtual Instrument to convert change in measured voltage to lux. Students also learn about a voltage divider circuit along with associated equations and use cases. Finally, they implement this logic to create a model of an automatic car headlight system with a LED that illuminates if the light value drops below a threshold. The challenge portion of this project challenges students to create at tripwire motion sensor using concepts they learned. Sensing Position or Distance Discover the difference between potentiometers and encoders then use them to find position. Students set up a potentiometer circuit and measure how voltage changes with rotation of the knob, converting voltage to position in degrees. Students then set up an encoder circuit and investigate how the counter input can be used to measure encoder rotation. Finally, students use this knowledge to create a light dimmer and a volume controller. Strongman Game Build a strongman game by sensing force with a piezoelectric film strip. Students are familiarized with the theory behind piezoelectric sensors and operational amplifiers and build a circuit to measure the force applied to a piezoelectric sensor. Finally, students use a Virtual Instrument to program a number of LEDs to illuminate corresponding to the amount of force applied to the sensor. Motor Control Understand how to use pulse width modulation to control the speed of a DC motor. Students attach a paper fan to the shaft of the motor and use a Virtual Instrument to output a pulse train. By adjusting the duty cycle of the pulses in the train students can control the speed at which the fan spins. This challenging project walks students through creating the necessary code to convert user input text to Morse code, output this code using a blinking LED, read that LED with a photo sensor, and then output that same code with a buzzer. Get started with a few ideas here. Now that students are comfortable acquiring and outputting data with a myDAQ and processing this data with DAQExpress, students are challenged to complete five open ended projects. Five prompts are given for creating an: Students are not given explicit instructions on how to complete each of these, and so though they build on the skills developed earlier, these are more challenging than previous projects. DAQExpress DAQExpress Save time with quick, clear access to DAQ measurements, get instant access to data without the need to program, then apply analysis or program for advanced acquisition, using built-in interactive tools to rapidly make data-driven decisions.

Chapter 4 : Labview Projects|Labview Projects for students

LabVIEW Based Electrical Projects for Students LabVIEW stands for Laboratory Virtual Instrumentation Engineering Workbench, which is a graphical programming tool used for measurement and control system applications.

Chapter 5 : Detail Explanation on LabVIEW Based Electrical Projects for Students

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NI LabVIEW Student Edition is equivalent to the full version of LabVIEW system design software with a student watermark on the front panel and block diagram.

Chapter 6 : All Projects [LabVIEW MakerHub]

Engineering Projects with NI LabVIEW â„¢ and Vernier contains engaging hands-on projects for SensorDAQ, LabQuest, or LabQuest calendrierdelascience.comts are introduced to engineering concepts and programming with NI LabVIEW software.

Chapter 7 : LabVIEW Projects - MTech Projects

myDAQ Projects for Engineering Students Wiring diagram for the Strongman Game project using a piezoelectric force sensor These projects become increasingly open ended as student's skill level progresses, allowing them to flex their engineering design muscles.

Chapter 8 : LabView examples: Projects â€“ LEGO Engineering

The LabVIEW Student Edition contains the following software: LabVIEW Student Development Environment LabVIEW Control Design and Simulation Module LabVIEW MathScript RT Module See the Resources tab for purchasing options.

Chapter 9 : LabVIEW Templates and Sample Projects - National Instruments

Here are some example projects using LabView.. Hand Puppet code. LabVIEW for MINDSTORMS code for the LEGO hand puppet. Morse code. Morse Code. This example shows how to turn a user input into a corresponding sequence of sounds.