



Arjun Bhusal

Electrical Engineer

Passionate in embedded system design and automation



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Butwal-11, Rupandehi
Nepal

Skills

PCB Designing
Embedded System
Design
PLC
Robotics
Prototyping and
Fabrication

Languages

English
Nepali
Hindi

Reference

Er. Achyut Raj Timilsina
Principal,
Korea Nepal Polytechnic
Institute, Nepal



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Work Experience

Lecturer

Korea Nepal Polytechnic Institute

January 2020 - Present

Lumbini Engineering College

September 2019 - Present

Electrical Engineer

KNPI Production Unit

February 2021 - Present

Embedded System Engineer

Future Lab Nepal

January 2018 - September 2018

Robotics Club Member

Robotics Club of Kathmandu Engineering College

November 2013 - August 2017

Education

Bachelors in Electrical Engineering

Kathmandu Engineering College, Tribhuvan University

2013 - 2018

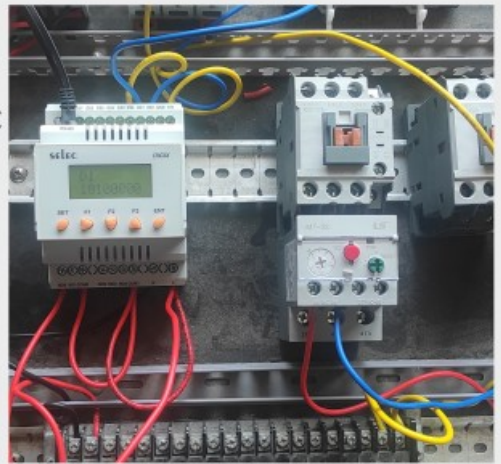
Experience as Trainer

2-Days Training on Motor Control Using PLC

Target Students: Students Pursuing Diploma in Electrical and Electronics Engineering

Objective: To operate Motor in Forward and Reverse Using PLC
To Start Motor with Start/Delta Starter Using PLC

Outcome: Students learned to make the ladder daigram for motor control application
Students got hands-on experience with PLC



7-Days Training on Programming ARM Cortex-M Series Microcontroller

Target Students: Students Pursuing Bachelor Degree in Electronics and Communication Engineering in Thapathali Campus

Objective: To make student familiar with ARM architecture
To make student familiar with bare metal programming
To implement STM32F1 board in projects

Outcome: Students learned ARM architecture
Students learned bare metal programming
Students made projects using STM32 Blue Pill and got hands-on experience with ARM Cortex-M3 Microcontroller



5-Days Training on PCB Designing With Eagle

Target Students: Students Pursuing Bachelor Degree in Electronics and Communication Engineering in Thapathali Campus

Objective: To make student familiar with Schematics and PCB Layout
To make student familiar with PCB fabrication process

Outcome: Students learned schematics and PCB layout designing using Eagle Software
Students designed and fabricated linear power supply circuit



3-Days Training on Basic Electronics and Motor Control

Target Students: Students Pursuing Bachelor Degree in Electrical Engineering and Electronics and Communication Engineering in Kathmandu Engineering College

Objective: To make student familiar with soldering and prototyping techniques
To make student familiar with motor driver circuit

Outcome: Students got hands-on experience with soldering
Student learned and made projects using 555 timer IC
Students learned H-bridge circuit



Design and Fabrication of Dot Matrix Display Board (2015-2017)

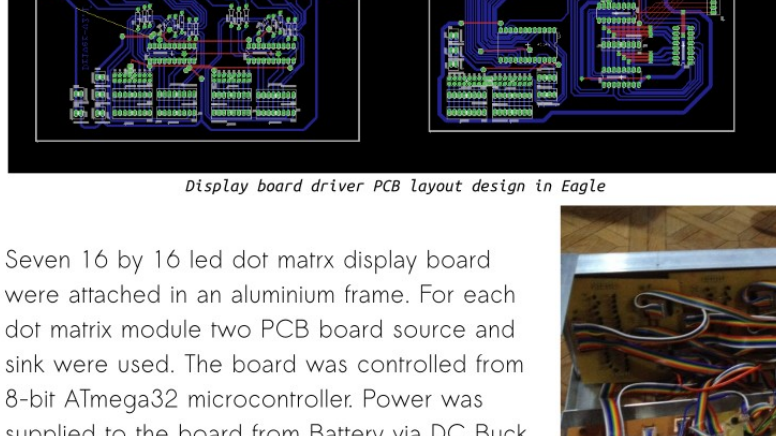
Objective

To design the dot matrix display board from scratch

Responsibility

Schematics and PCB Designing

Interfacing the Display Board with Microcontroller



Display board driver PCB layout design in Eagle

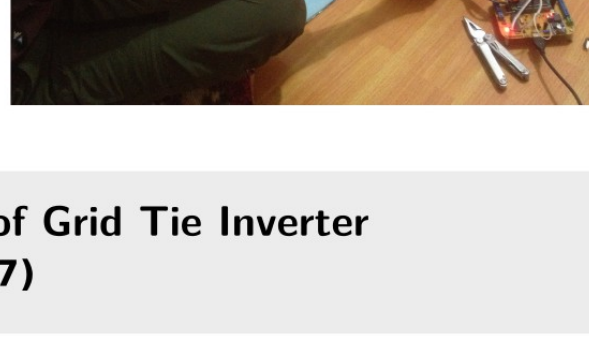
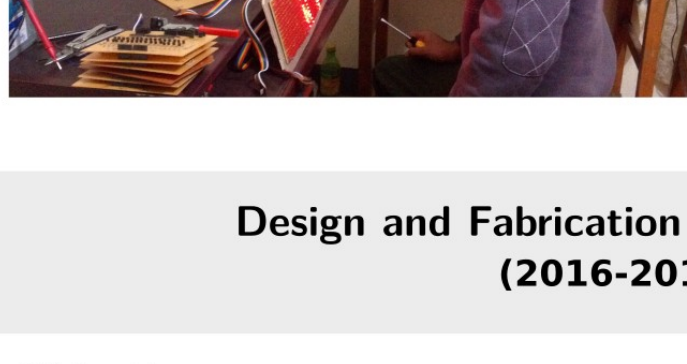
Seven 16 by 16 led dot matrix display board were attached in an aluminium frame. For each dot matrix module two PCB board source and sink were used. The board was controlled from 8-bit ATmega32 microcontroller. Power was supplied to the board from Battery via DC Buck Converter.

The multiplexing technique was used to save resources and power.

Two individual PCB were made for driving a led matrix of 16 by 16 leds. One PCB consisting of SN74343(latch IC) and transistor served as a data and current source for leds. Other PCB was for sinking the current from leds. For the purpose ULN2003 IC with current sinking capability was used.



Display Board Prototyping



Design and Fabrication of Grid Tie Inverter (2016-2017)

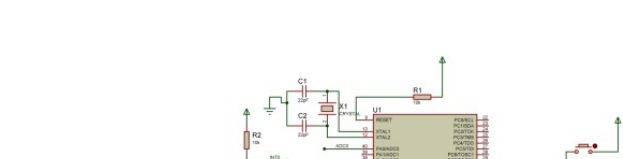
Objective

To design, simulate and make prototype of grid tie inverter for battery storage system

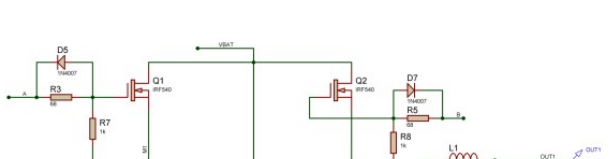
Responsibility

Design and fabrication of the inverter circuit

Implementation of the control scheme using AVR ATmega32 microcontroller



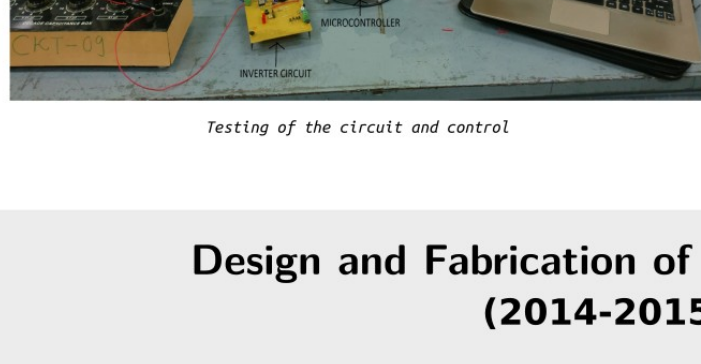
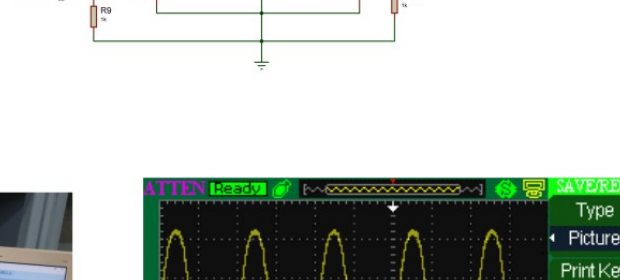
Block diagram of inverter



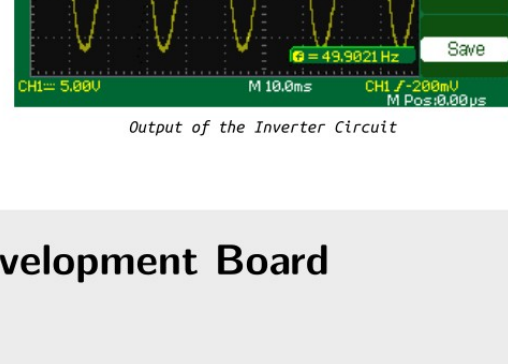
Inverter Design in Matlab-Simulink



Inverter Circuit Design in Proteus



Testing of the circuit and control



Output of the Inverter Circuit

Design and Fabrication of Development Board (2014-2015)

Objective

To design and fabricate the development board for ATmega32 microcontroller

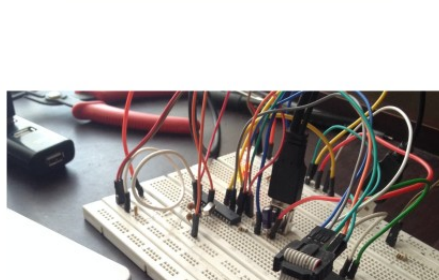
Responsibility

Schematics and PCB Designing

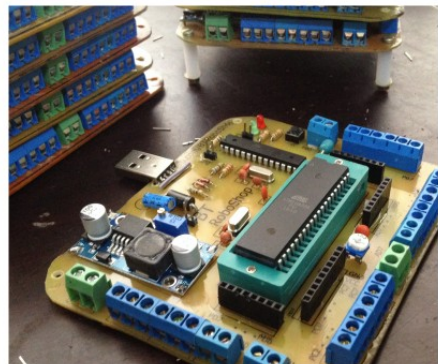
Fabrication of the circuit board



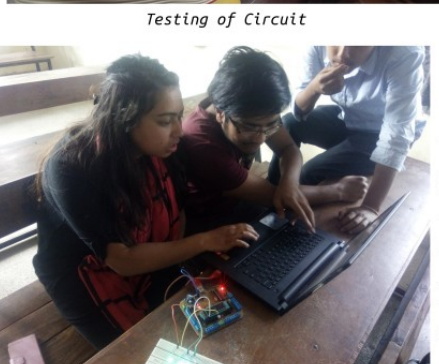
Development Board Schematics Design In Eagle



PCB Layout of the board in Eagle



Fabricated board



Trainer and Trainee Using the Development Board



PCB Layout of the board in Eagle

This development board was used by Robotics and Automation Center, Thapathali Campus for training purpose. Trainer and students used the board for learning microcontroller based design and for controlling robot.

Design and fabrication of Motor Driver and Controller for CNC Machine (2014-2015)

Objective

To design and fabricate High Power Motor Driver and Controller for CNC Machine

Responsibility

Design and fabrication of High Power DC Motor Driver

Design and fabrication of feedback element

Design and implementation of controller using AVR Microcontroller



PCB Layout of High Power Motor Driver in Eagle

The problem: The Stepper motor were costly, so we thought of using DC geared motors utilizing the servo mechanism.

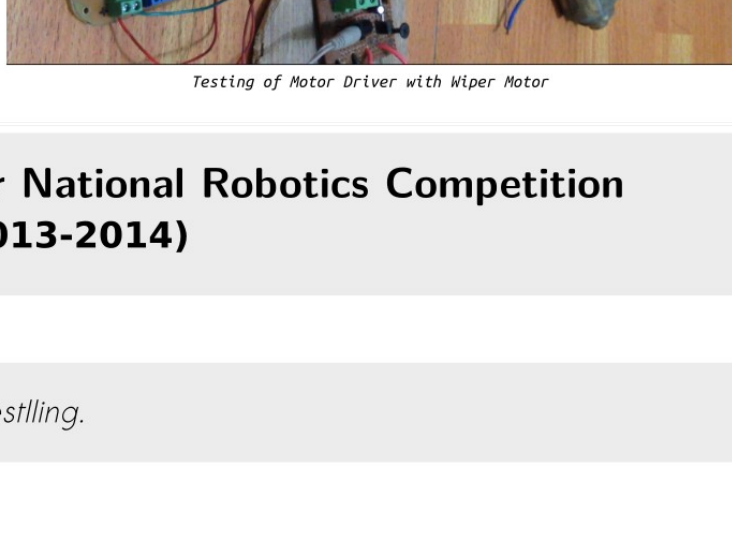
Design of Motor Driver: The high power H-bridge motor driver was designed using power BJT Transistor and PCB was fabricated and tested.

Design of Feedback Element: The rotary optical sensing system was designed, fabricated and tested.

Design and Implementation of Controller:

The proportional control technique was implemented to control the position of DC motor. The controller was implemented using AVR ATmega32 microcontroller and program was written in Embedded C.

Dropping of Project: Due to lack of expertise and mentor the project was halted.



Testing of Motor Driver with Wiper Motor

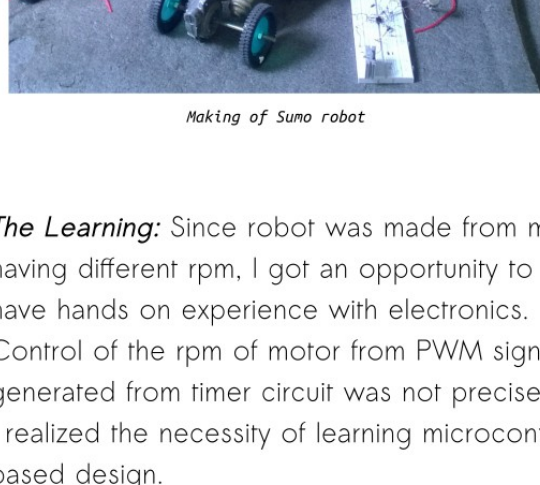
Fabrication of robot for National Robotics Competition (2013-2014)

Objective

To fabricate robot for sumo robot wrestling.

Responsibility

Design and Implementation of the controller circuit



Making of Sumo robot

The Learning: Since robot was made from motor having different rpm, I got an opportunity to have hands on experience with electronics. Control of the rpm of motor from PWM signal generated from timer circuit was not precise. I realized the necessity of learning microcontroller based design.



Robot sumo wrestling

Fabrication of Spider Robot For National Engineering Design Competition (2012-2013)

Objective

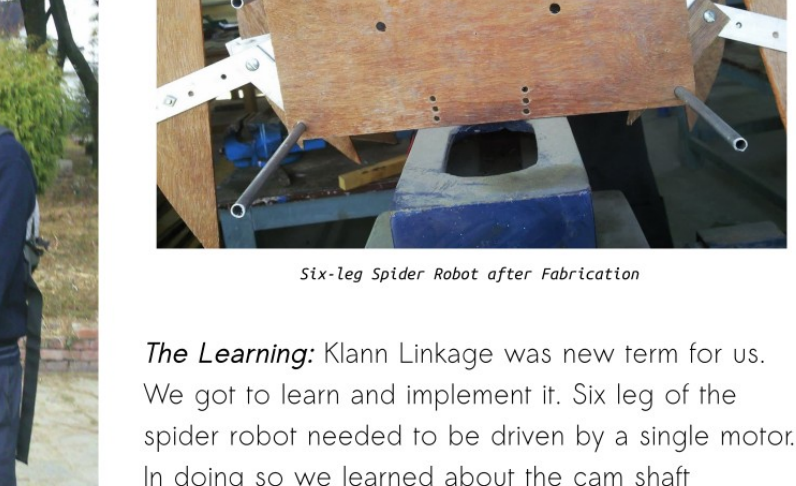
To fabricate a walking robot that can be used for exploring dangerous and rough areas.

Responsibility

Ideate, Design and Fabrication of the robot

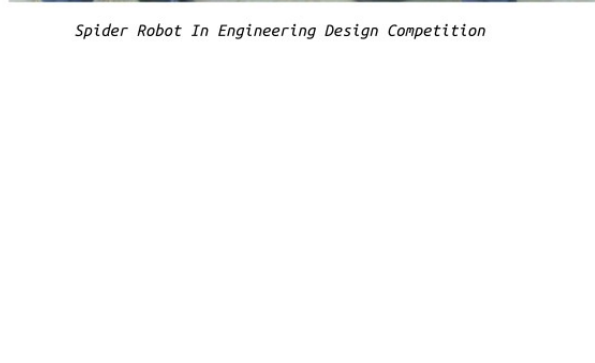


Fabrication of Walking Robot



Six-Leg Spider Robot after Fabrication

The Learning: Klann Linkage was new term for us. We got to learn and implement it. Six leg of the spider robot needed to be driven by a single motor. In doing so we learned about the cam shaft mechanism and conversion of rotary motion to linear motion.



Spider Robot In Engineering Design Competition