SOLAR POWER SMART FENCE WITH PC INTERFACE

AIM:

Design and Development of Solar Power Smart Fence With PC Interface.

PURPOSE:

Difference between Electric fence and smart fence is electric fences generate shocks but smart fence detect person entry even without touching of them. We are seeing fences for various applications like domestic security, Government security and border security. But existing smart fences worked based on resistance variation when anyone touch them. Fence is nothing but conducting wires. If anyone touches them then resistance of wire will vary. Based on resistance controller will detect person or animal entry. But in some cases humans will not touch fence because of their smartness. To avoid this kind of situation we want to design and develop a new kind of smart fence using Arduino microcontroller. Proposed project title is solar power smart fence with PC interface using Arduino.

DESCRIPTION:

Arduino and USB-TTL cables connected together through UART port. High sound siren controlled by relay which is connected with Arduino digital pin. Smart Fence circuit implemented with TTP223 chip that can work based on capacitance. TTP223 connected to Arduino with its driver board.

WORKING:

Here Arduino communicates with PC (personal computer or laptop) and PC has C# application that can display status of intruder detection. Fence wire arranged in multiple rows type. If anyone enters through fence wire then capacitance of fence wire will vary and it will detect by driver circuit. Arduino reads this status and switch ON siren through relay. Siren will alert surrounding areas. When intruder detects then information will update in PC application and stored in local file with date and time. It will be useful as like mini database and accessed at any time. The entire system will worked on battery and battery will charge through Solar panel.

TECHNICAL SPECIFICATIONS:

HARDWARE:

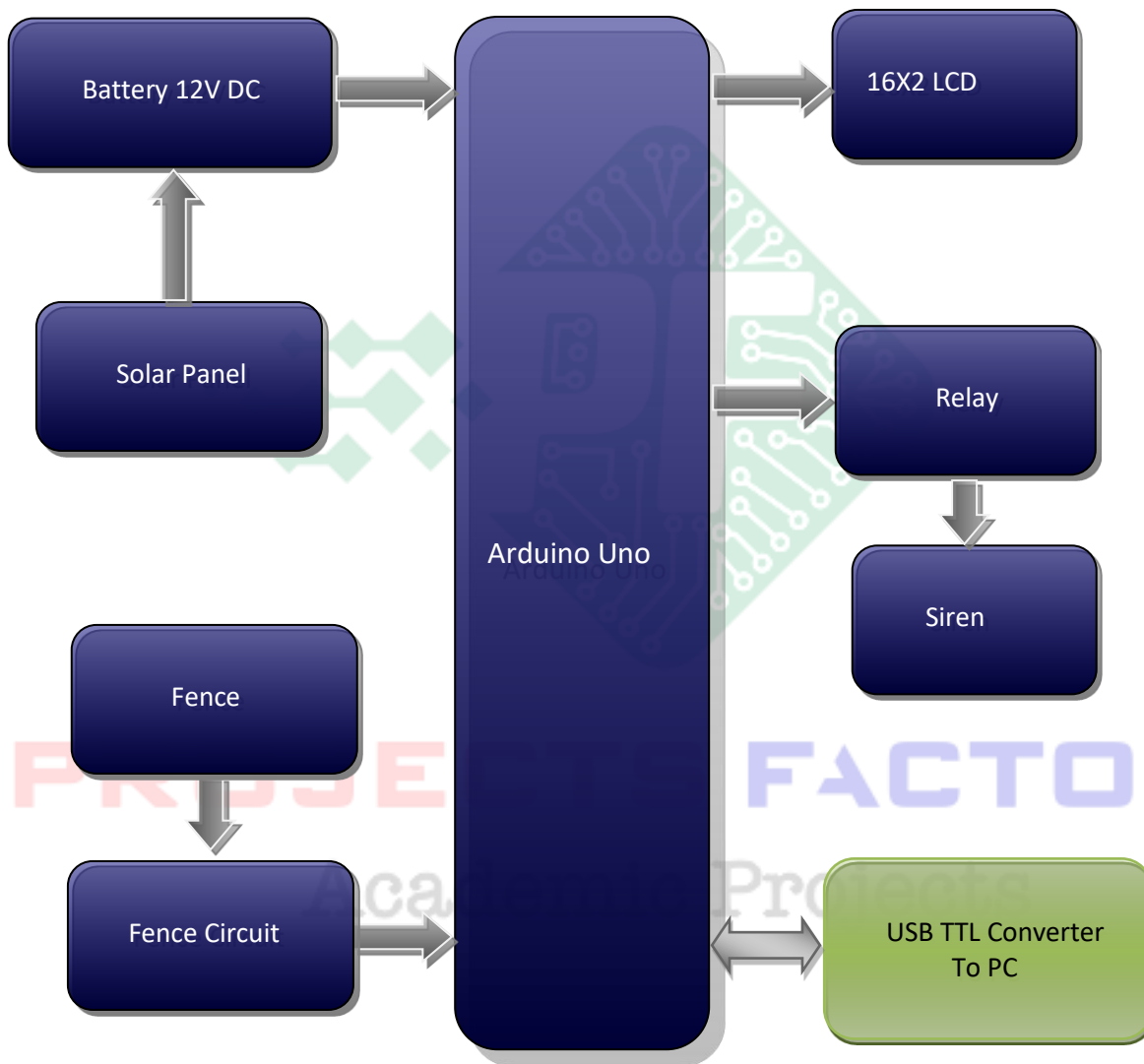|		
Microcontrollers	:	Arduino Uno
Crystal	:	16 MHz
LCD	:	16X2 LCD
Communication Cable	:	USB-TTL
Fence detect circuit	:	TTP223
Relay	:	12V DC Electromagnetic
Siren	:	12V DC
Power Source	:	12VDC Solar Panel, Battery

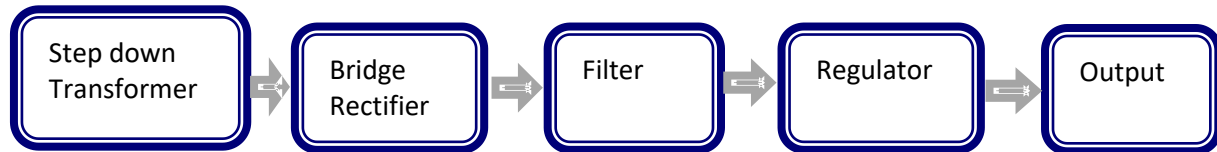## SOFTWARE:

Arduino IDE

Proteus based circuit diagram

APPLICATIONS:

➢ Security Applications

➢ Fencing Applications

➢ Smart Fence Systems

➢ Border Security Applications

➢ Museums Security Applications

BLOCK DIAGRAM:

POWER SUPPLY BLOCKDIAGRAM:

| Step down Transformer | → | Bridge Rectifier | → | Filter | → | Regulator | → | Output |

INTERFACES COVERD:

- We have covered Arduino and PC interface
- Contactless fence circuit design and development
- Relay and siren interface