CS7502-EMBEDDED SYSTEM DESIGN

SMART CAR WIPER

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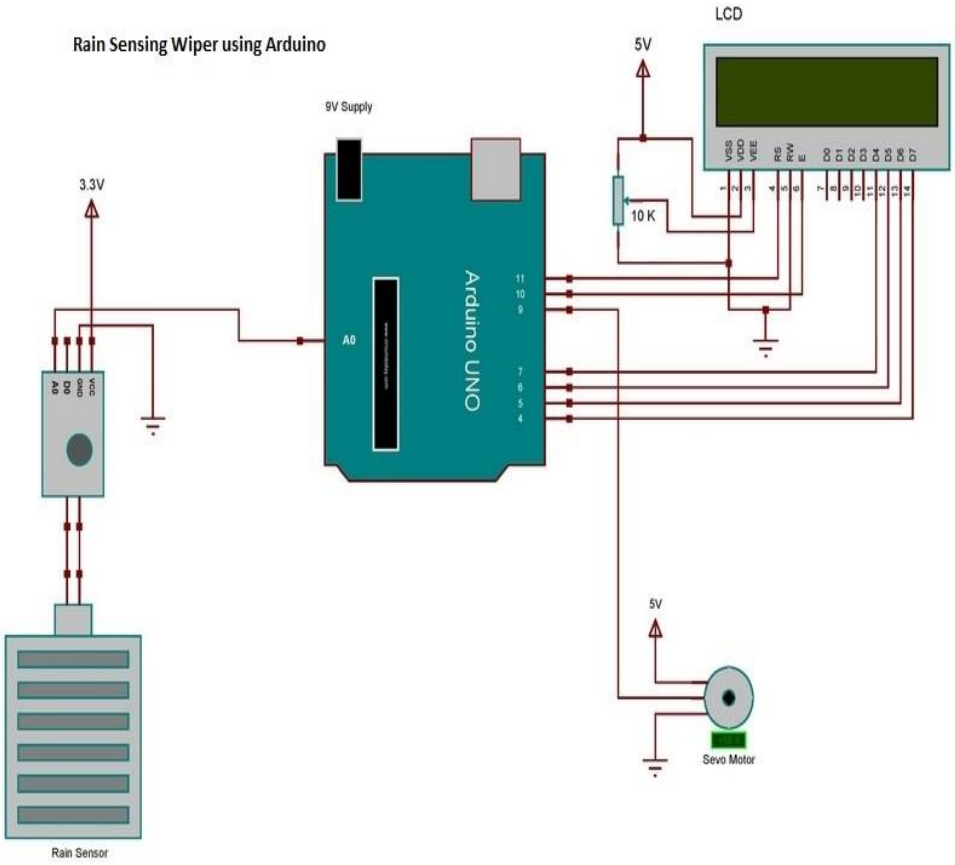
SMART CAR WIPER

Objective:

Car wipers play a key role in assuring the driver's safety during rain.The traditional wiper systems, however, requires driver's constant attention in adjusting the wiper speed and the intermittent wiper interval because the amount of rain on the windshield constantly varies according to time and vehicle's speed. The manual adjustment of the wiper distracts driver's attention, which may be a direct cause of traffic accidents. The project is an endeavor towards an effective design and development of an automatic windshield wiper system, based on intensity of rain.

Circuit diagram:



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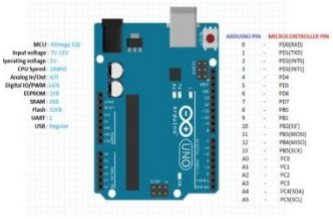
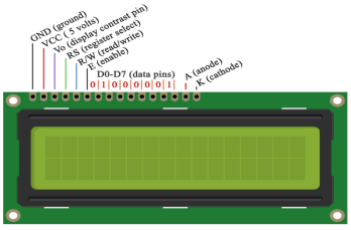
Components required:

S.NO	COMPONENTS	DESCRIPTION	IMAGE
1.	Arduino uno	It is a microcontroller based on ATmega328.	
2.	Servo motor	Used to move or rotate an object at required angles.	
3.	Water sensor and sensing module	To sense or detect water and records its intensity.	
4.	LCD display	Display the information generated by arduino.	

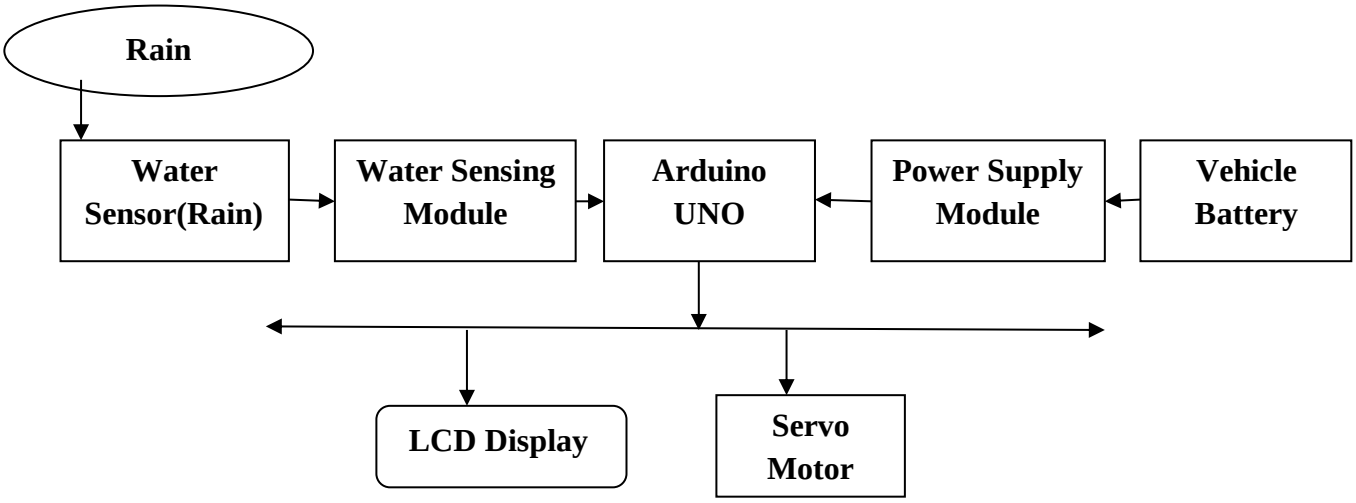
Specification and requirements form:

Name	Smart car wiper
Purpose	Automatically sense the rain and regulate the frequency of wiper operation.
Inputs	Varying intensities of Rain(water droplets)
Outputs	Varying speed of car wiper(servo motor ON) LCD display.
Functions	Detect and measure the intensity of rain. Control the frequency of servo motor accordingly.
Performance	Adjusts wiper speed based on intensity of rain.
Manufacturing cost	Rs.1100/-

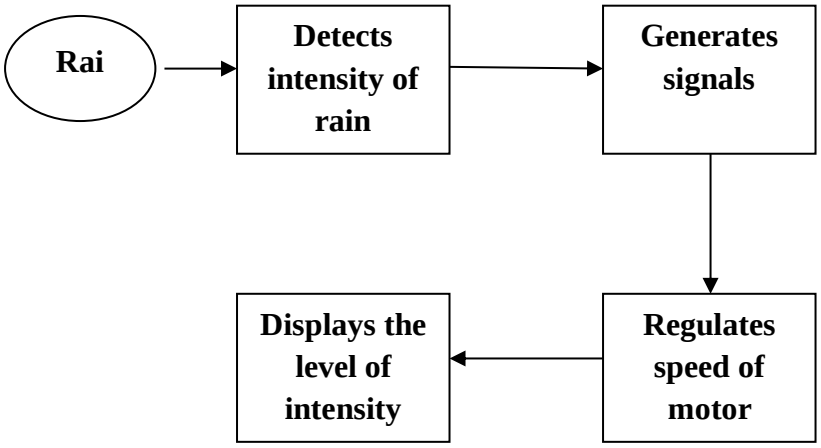
Functionality:

In this setup, the microcontroller adjusts the speed of the servo motor according to the signal given by the rain sensing module. The rain sensing module sends the data according to the intensity of the rain in the form of signals. The intensity of the rain is resembled as pulse width modulation (PWM) to control the servo motor at its signal line. The speed of operation of servo will be varied according to the strength of the signal. And the intensity of rainfall will be displayed on the LCD according to the signal strength .

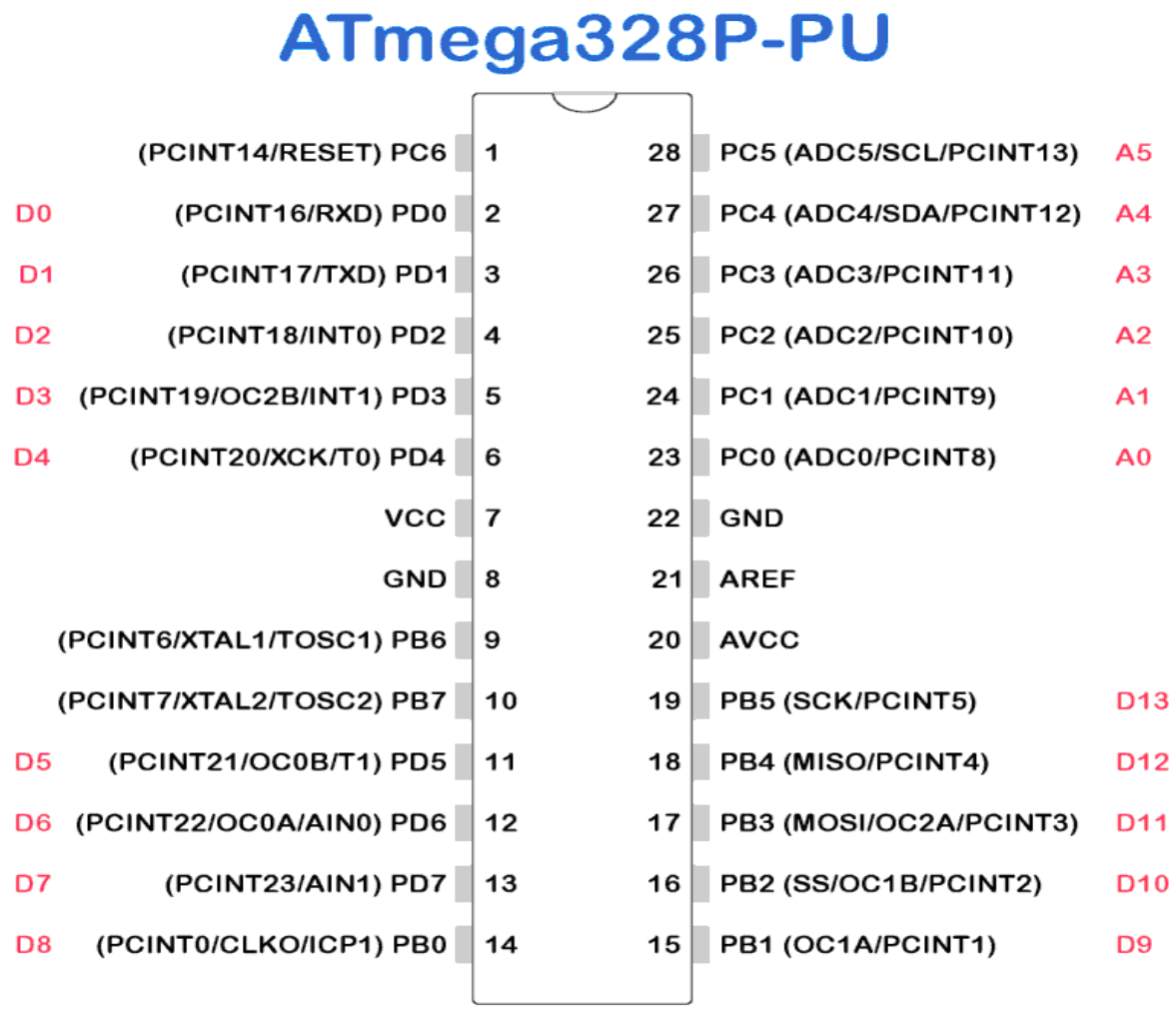
Hardware architecture:



Software architecture:



PIN diagram:



Budget:

S.no	Component	Cost
1.	Arduino UNO(Atmega328)	450
2.	Water sensor	200
3.	Water sensing module	200
4.	Servo motor	130
5.	LCD display	150
	Total	Rs.1130

Advantages:

- Ensures safety of people while travelling in cars.
- It can be easily and quickly installed in automobiles.
- Low power consumption.
- Simple and portable.
- Cost effective.

Applications:

- Can be used in four wheelers ,aircrafts ,trains etc..