Continue

Arduino sensor project ideas

Whether you’re a beginner or an experienced maker, these Arduino projects provide a great opportunity to learn programming, electronics, and problem-solving skills. So the brightness of the bulb is adjusted per the touch time.Components Used:Arduino Board x 1Touch Sensor2N2222 NPN Transistor1 Kohm ResistorSmall BulbPower SupplyBreadboard for connectionsConnecting WiresThe link to the project site is given below:Touch dimmer circuitTCS3200 Color sensorThe TCS3200 Color Sensor Module has a high-quality light sensor that allows the sensor to sense any color through a combination of Red, Green, and Blue. As soon as the intensity of light decreases below a certain value, the status of the bulb changes from OFF to ON.Components you need for this project are:Arduino UnoLDRSPDT RelayConnecting WiresLink to the project site is given below:LDR-ArduinoSuntracker using LDR and Servo motor with ArduinoObjective: To build an Arduino Servo-controlled mechanism that follows the sun as it moves in the horizon.Solar Panels can be attached to the front so that maximum sunlight gets absorbed by them at any instant. Components used:Arduino UnoDHT11 Humidity and Temperature Sensor Module16×2 LCD10k Ohm potentiometer5kohm resistorPower supplyBreadboard for connectionConnecting WiresLink to the project site is given below:Humidity Sensor ModuleWater flow sensorWater flow sensors are used in pipes to measure the rate of flow of water and to calculate the volume of water flowing through the pipe.Water flow and Volume measurement ProjectThis project demonstrates a smart way to monitor the flow of water. So when you go through these projects, just try to grasp the idea behind these sensor applications and write down how you can use them in your project.The link to each project is given below the respective project’s summary.Just try out these sensors to unleash that creative engineer within you!LM393 Speed sensorLM393 is a speed sensor module used for measuring the speed of the motor, pulse count, etc.Project: 5V geared motor speed measurement Speed Measurement of DC MotorOur goal here is to regulate the speed of a 5V geared motor. You can check the values on the LCD screen.The project link is given below-Water flow/volume measurementMoisture SensorAbout Moisture sensor: Moisture sensor detects the level of moisture present in surroundings and hence commonly used in plant Irrigation type projects.Soil Moisture measurement using ArduinoObjective: To measure the soil moisture content and print it on the Serial Monitor of Arduino IDE. If the motion is violent enough during an earthquake and crosses a certain threshold, a local alarm light (LED) glows, a buzzer sounds, and a relay energizes. An annunciator is mainly used in process plants, power plants, and industries to monitor various plant conditions to alert operators about abnormal conditions or parameter deviations. Check the full tutorial with the circuit and code. Arduino further processes this data and thus determines the frequency with which the buzzer produces sound.Components you need for this project are:Link to the project site is given below:Smart Blind StickHC-SR501 Pyroelectric Infrared Sensor ModuleAbout: Pyroelectric Infrared Sensor or PIR Sensor senses the heat energy emitted by a human body in the form of Infrared Radiation.Objective: To interface a PIR Sensor with Arduino and then control(ON/OFF) home appliances Components you need for this project are:Arduino BoardHC-SR5012 Channel Relay ModuleA.C ApplianceLink to the project Site is given below:PIR Sensor-Arduino Last updated on March 22nd, 2024 at 05:59 pmAre you a beginner and want to work on different sensors, but don’t know how to start? Besides this, the device can also be used to track your vehicle location and other objects. This project is available at Home Automation Using Arduino Through Android Device How much does an inverter cost? You can check the step-by-step guide to make an Automatic Plant Watering System In this project, we will be constructing an earthquake indicator. A basic model with a single battery costs about 20-25K INR. Also, the Circuit has an LDR to sense the light intensity and an RF remote to locate the Stick remotely.The ultrasonic sensor is the heart of this Arduino-based Alarm stick. Components you need for this project are:Arduino BoardBuzzer470 Ohm ResistorIR Sensor Module x 2Power SupplyNPN transistorPushbuttonConnecting WiresLink to the project site is given below:IR Sensor-based Motion Sensor AlarmHC-SR04 Ultrasonic SensorAbout: HC-SR04 Ultrasonic Sensor is a simple ultrasonic sensor that can measure distance up to 400 cm. This project is available at Temperature-Based Fan Speed Control And Monitoring Using Arduino This ESP8266-based wireless web server project is built around an Arduino. Make this Arduino Uno-Based Window Alarm Annunciator Introducing a Noise Detector System with an automatic recording feature! Tackle noise pollution in offices, libraries, and classrooms. This project is based on Arduino Uno and IR sensors and is used to automatically switch on and switch off a washroom’s light that works on AC mains. Check the Full Project details with the Circuit and Code: Digital Thermometer with Arduino Creating a Bluetooth-controlled device with an Arduino Uno and an HC-05 Bluetooth module enables the control of lights or even relays to manage AC appliances wirelessly using an Android smartphone. ESP8266 contains a built-in 32-bit low-power CPU, ROM, and RAM. This device alerts you to loud noises, records them, and can be a game-changer for productivity. Components you need for this project are: Arduino UnoMoisture SensorBreadboard for connectionsConnecting wiresLink to the project page is given below:Arduino Soil Moisture SensorRain Sensor ModuleAbout: Rain Sensor senses the droplets of water on its detector plate. This project is available at Noise Detector with Automatic Recording System Using Arduino With IoT This project is an automatic fan speed control and monitoring system that controls the speed of an electric fan according to the requirements using Arduino. This project is available at Arduino-based RF controlled robot The fancy lights controller described here is built around the Arduino (an open-source single-board microcontroller) platform that can be purchased in pre-assembled hardware form. This solution is low-maintenance and labour-saving and supports sustainable waste management. This project is available at Home Automation Using Arduino Through Android Device Presented here is a project that lets your Raspberry Pi (RPi) turn into an IoT-based smart camera and then control and watch the live video being captured by this camera on your smartphone from anywhere on the planet. This is an innovative project that allows you to make a speed regulator at home using an Arduino Uno and a speed sensor.The speed sensor detects the change in the value of the 10K pot and varies the speed accordingly. Since Arduino-Sunflower acts like a real Sunflower in the presence of sunlight, it is called an electronic Sundancer!This project was posted by Elecrow on Instructables.comComponents you need for this project are:Arduino Board LDR(Light dependent resistors) X 4Connecting WiresLinear Potentiometer X 4Base Shield For ArduinoCardboardFoamboardStickServo MotorLink to the project site is given below:Arduino SunflowerHumidity SensorAbout this sensor: This sensor module measures the humidity and temperature of the surroundings.Temperature and humidity measurement using a humidity sensorObjective: To measure the humidity and temperature of surroundings using a Humidity sensor with Arduino and then print the value on an LCD. This project is designed to control three appliances but can be extended to six or more using an Android Phone. With efficient use of a moisture sensor and downloadable component layouts and source code, this could fit in perfectly for potted plants, be it on your terrace, the balcony, or the front lawn. The main feature of this project is that it will display the date and time and will alarm at the desired time, and it has a radio function too. You can find all the details related to this project here: Arduino-based GPS Tracker Presented here is the circuit that drives twenty LEDs in a random manner. Here is the list of 15 Arduino Sensors with Projects for you to get started.In this post, we have listed the most popular and widely used sensors plus one or more projects based on each sensor. Last updated on March 22nd, 2024 at 05:59 pmAre you a beginner and want to work on different sensors, but don’t know how to start? Check the step-by-step guide to make this DIY Arduino clock: Arduino-Based Real-Time Clock With Temperature Display In this project, we build a smart tracker that can keep track of a child. You can use this oscilloscope to capture frequency signals up to 5 kHz. The Arduino board, the heart of the oscilloscope, reads the values from its inbuilt analog-to-digital converter (ADC) and pushes these to the PC via a USB port. It works everywhere. Project: Color detection using TCS-3200 and LCDColor detection using-TCS-3200This project allows you to detect the color of something without even looking at it. When the person leaves the bathroom, the light will turn off. Arduino Line FollowerObjective: To build a Line Follower Robot using two IR sensors with Arduino. Enhance your gaming experience with this amazing glove powered by Arduino. The result is a home automation system with minimal electronic basic components without complex soldering and a simple and flexible design. The project is available at PC-based oscilloscope The IoT using Arduino microcontroller (MCU) is easy and fun for those who are new to the field. It is a simple and flexible home automation system with only a few electronic components and without complex soldering. The circuit is nothing but a portable four-channel, multi-mode digital light controller, realized using very few external components. The longer the touch time, the brighter the bulb glows. How about you just buy the battery and use this Arduino project for your inverter? It is highly sensitive and can sense different touch modes i.e. single tapping, long touch, and swipe, etc.Project: Touch Dimmer circuit using ArduinoTouch Dimmer switch circuit using ArduinoObjective: In this project, the brightness of a small bulb is controlled using a touch sensor. The whole system works under a simple algorithm called matching algorithm, which is used to compare previously-stored templates of fingerprints against users’ fingerprints for authentication purposes. Components you need for this project are:Arduino UNOAccelerometerDC MotorsHT12DHT12EL293d Motor DriverRF Module9v BatteryRobot ChasisConnecting WiresLink to the project site is given below:Hand Gesture Controlled RobotIR Infrared Obstacle Avoidance Sensor ModuleAbout IR Sensor: IR or Infrared Sensor uses infrared waves to detect the presence of an object or white/black surface. We’ve got you covered! Here, we listed exciting and unique Electronics project ideas you can explore with Arduino. Check Full Project here with Circuit and Code: Sewer Drain Shield This digital thermometer is built around an Arduino board (BOARD1), a temperature sensor LM35 (IC1), a 16×2 LCD (LCD1), and a few other components. Components you need for this project are: Arduino UNOMotor Driver L293DGeared DC MotorsIR Sensor Module x 2Power SupplyConnecting WiresLink to the project site is given below:IR Sensor-based Line FollowerObjective: To build a motion-sensing alarm with Arduino and IR sensors. The resistance value is inversely proportional to the intensity of light.Controlling the Status of Bulb using LDRObjective: To control the state of a bulb using LDR and Relay with Arduino. Ultrasonic, IR, temperature, motion, gyro, fingerprint & more sensor based projects for electronics. Make This Joystick-Controlled Industrial Automation System This project demonstrates how to build a real-time clock (RTC) with a temperature display using Arduino, a DS3231 RTC chip, and an SSD1306 OLED display (128×64 pixel). Four LEDs are made to glow in different sequences and patterns, controlled from the Arduino board. You can make your own Inverter at Home. These projects cover a wide range of applications, such as automating your home, creating smart gardening systems, building robots, designing IoT devices, and even making wearable technology. The RF remote control provides the advantage of a good controlling range (up to 100 meters with proper antennae), besides being omnidirectional. This flasher has a chip that controls the random flashing rate of the LEDs. Complete Circuit connection is available here: Flash Twenty LEDs Using Arduino This project describes how to make an alarm clock radio in Arduino. When we place a colored sheet in front of the sensor, it detects the color and flashes it on the 16×2 LCD.This project can come in handy for blind or color-blind people or save your relationship when she asks you to pick up the perfect shade of Lipstick.The project link is given below-Color detection using TCS-3200MQ-2 Gas sensorMQ-2 Gas sensor or detector senses the concentration of gases such as LPG, hydrogen, alcohol, propane, methane, smoke, and carbon monoxide in the air.Alcohol detector using MQ-2 with ArduinoWith this project you can make your handy alcohol detector at home and save yourself when your drunk friend insists on driving, claiming that he is not drunk.An alcohol detector detects the presence of alcohol present in its surrounding atmosphere and sends a signal to flash a warning message on the 16×2 LCD and set out the alarming buzzer. It senses the distance from the obstacle and sends this data to Arduino. Components you need for this project are:Arduino UnoRain SensorBuzzer LEDLink to the project site is given below:Liquid Sensor ModuleAccelerometer SensorAbout the accelerometer sensor: The Accelerometer measures the acceleration in one to three axis and thus can be used to sense tilt movements.Objective: To build an accelerometer-based gesture-controlled robot using Arduino. Control virtual games and explore immersive VR worlds using easy hand movements. The sensor has 4 onboard pins that connect to a microcontroller like Arduino.d Waves. Now you don’t need to worry about the low speed of the fan interrupting your NETFLIX experience.Components listArduino UnoLM393 Speed Sensor Module5V geared motor with encoder wheelPCB and breadboardCables and connectors16×2 LCD10K POTThe link to the project is given below-touch sensorAbout Touch Sensor: Unlike pushbuttons, a touch sensor is activated due to physical contact. It aligns with the Central government’s Clean India initiative, integrating smart waste management to protect water bodies. Before you go through the post, I want you to know that the projects listed below are selected very carefully by keeping in mind every aspect.NOTE: Please keep in mind that each Arduino-Sensor project listed below is selected based on creativity and application. This time, let’s explore specifically Arduino projects. Get the widest list of sensor based projects topics and ideas. A highly sensitive ADXL335 accelerometer is presented that can indicate vibrations. Presented here is humidity and temperature monitoring using Arduino. Connect a 9-volt battery or adaptor to the board to operate it. Build your own Earthquake Detector Project Here, we describe a GPS clock based on Arduino Uno R3—an AVR ATmega328-based microcontroller board with six analog input pins and 14 digital input/output (I/O) pins. Check Full Project Details with Code and Circuit: Arduino-based gaming glove This DIY sewer drain shield system, combining ultrasonic sensors, GSM modules, nets, and PVC pipes, reduces debris entering drainage systems, thus ensuring cleaner, more efficient operations. This temperature value is then displayed on the LCD.Components used:1 x Arduino UNO (can be any Arduino board)1 x 16×2 LCD1 x LM35 Temperature Sensor1 x Breadboard1 x USB Cable1 x 10k Potentiometer1 x 220-ohm resistor1 x 9V Battery and clip (optional, for more portability)Link to the project site is given below:Arduino ThermometerLDRAbout LDR: LDR or Light Dependent Resistor changes its resistance according to the intensity of light that falls on it. This robot can be built very quickly on a small budget. This circuit controls both soft-start and soft-stop timings through pulse-width modulation (PWM). It is a complete and self-contained Wi-Fi network solution that can carry software applications as a stand-alone device or connected with a microcontroller (MCU). Previously, we covered the 45+ mini-projects. Here, you can check the complete project details: Alarm Clock with Radio Using Arduino This project describes an Arduino-based wireless frequency meter designed to measure the frequency of sinusoidal AC signals in the range of 50Hz to 3kHz. Make Arduino-Based Wireless Frequency Meter at Home Presented here is a window alarm annunciator based on an Arduino Uno board. Here, we develop a program with different functions for checking different ICs. This project is available at Digital IC tester with the embedded truth table Here, we present a simple Arduino-based RF-controlled robot that can be driven remotely. This project is available at Gesture-Controlled Robot Here, we describe an electronic DC motor starter using an Arduino Uno board. Objective: To detect the water droplets by Blinking an LED and a buzzer. This project is available at ESP8266 wireless web server This article represents an Arduino-based digital IC tester that is highly capable, highly reliable as well as cost-effective. It explains how a robot can be controlled using sound or gestures. Objective: To build a Door Alarm using an Ultrasonic Sensor with Arduino.Components you need for this project are:Arduino BoardBuzzerHC-SR04 Ultrasonic SensorBreadboard for connectionConnecting WiresLink to the video source is given below:Arduino Door AlarmObjective: To measure the distance of nearby objects using an ultrasonic sensor and Arduino.Components you need for this project are:Arduino BoardLCD DisplayHC-SR04 Ultrasonic SensorBreadboard for connectionConnecting WiresThe link to the video source is given below:Measuring Distance using HC-SR04 SensorSmart Blind Stick Using ArduinoObjective: To make a circuit using an Ultrasonic sensor and Arduino which indicates the object in front by producing a beep sound.This circuit can act as a smart blind stick if fitted onto a stick. You can check the step-by-step guide to make this project here: Arduino-based Automated Washroom Light Using IR Sensors This project can control up to four industrial electrical appliances with the help of a joystick and an Arduino Nano board. With certain modifications, this can be turned into a knock-and-shake detector for ATMs, vehicles, or door-break alarms as well. Arduino further processes this data and thus determines the frequency with which the buzzer produces sound.Components you need for this project are:Link to the project site is given below:Smart Blind StickHC-SR501 Pyroelectric Infrared Sensor ModuleAbout: Pyroelectric Infrared Sensor or PIR Sensor senses the heat energy emitted by a human body in the form of Infrared Radiation.Objective: To interface a PIR Sensor with Arduino and then control(ON/OFF) home appliances Components you need for this project are:Arduino BoardHC-SR5012 Channel Relay ModuleA.C ApplianceLink to the project Site is given below:PIR Sensor-Arduino Are you looking for some cool ideas for Arduino projects? This project is available at Fancy Lights controller Here, we describe how you can make your own oscilloscope at a very low cost using your PC and an Arduino board as the hardware for signal acquisition. This project is available at DC Motor Starter Using Arduino Uno Board This project is based on the Android app and Arduino Uno, using Bluetooth as the wireless communication medium. This project is available at Fingerprint Lock This project is a simple and exciting plant-watering system that you can build yourself in just a few hours. Whenever a person enters the washroom, the light bulb (or tube light) will automatically turn on. This project is available at IoT-Based Smart Camera Using Android And Raspberry Pi The list of interesting Arduino projects ends here.....But! If you are still looking for unique electronics project ideas, then you can check out the Electronics For You Projects. The frequency of the beep sound increases as the stick comes closer and closer to the obstacle. Congratulations! Now you are a traffic cop (almost)!The project link is given below-Alcohol detector using MQ-2LM35 Temperature SensorAbout LM35 temperature sensor: LM35 is one of the popular temperature ICs. It is used to measure the surrounding temperature in the form of the analog voltage.Arduino Thermometer using LM35Objective: To measure and display the temperature of surroundings using an LM35 temperature sensor and display the readings on the LCD.LM35 measures the temperature and sends this in the form of analog voltage to Arduino. This project is available at Humidity & temperature monitoring This simple fingerprint door unlock project using Arduino can be very useful for door security, attendance systems, and much more. This is a two-in-one project to control a robot in four directions (forward, backward, right, and left) either by clapping or through simple gestures. This project is available at GPS Clock Using Arduino This project is based on Interfacing an Android application to an Arduino Uno board using Bluetooth. The water flow sensor detects the rate of flow of water and keeps track of the total amount of water that has flowed through it. In this article, humidity and temperature information from the DHT-11 Humidity and Temperature sensor is analyzed graphically on the ThingSpeak platform using Arduino MCU and ESP8266 Wi-Fi module. And not merely based on the complexity involved. So, let your imagination run wild and bring your ideas to life with these Arduino projects! This Arduino-based gaming glove works like a mouse and keyboard in the air and allows you to control a graphic user interface (GUI).