

# INNOSPEED 3.0

LETS START



## Challenge 1:

In this challenge, the objective is to establish communication between an ESP32 and an Arduino Uno using a protocol of your choice (such as I2C, SPI, or serial communication). The ESP32 is connected to a push button, while the Arduino controls three LEDs: red, green, and orange. When the button is pressed for 5 seconds, the red LED lights up. If the button remains pressed for 10 seconds, the red LED turns off and the green LED lights up instead. Continuing to hold the button for 15 seconds will turn off the green LED and activate the orange LED.



## Challenge 2:

This challenge involves creating a smart door system that communicates via Wi-Fi using Firebase. When a user presses a virtual button in the Firebase interface, the door automatically opens. Additionally, a notification is sent to the Firebase user once someone passes through the door. The system also includes a people counter: each time a person enters, the total number of entries is displayed on either a 7-segment display or an LCD screen.



## Challenge 3:

In this challenge, a smart house system is controlled using computer vision based on hand gesture recognition. Three specific hand symbols are used to trigger different actions:

Symbol 1 controls the house door, which is operated by a DC motor.

Symbol 2 controls the parking gate, managed by a servo motor.

Symbol 3 turns on a LED light.

The system uses a camera to detect and interpret the hand gestures in real time, enabling contactless control of key smart home components.



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## Challenge 4:

In this challenge, participants are invited to design and build a game of their choice such as Snake, Super Mario, or Guess the Word that runs primarily on an LCD screen and uses analog input components (like potentiometers, buttons, or joysticks). Participants are free to add any additional components (e.g., LEDs, buzzers, sensors), and will earn extra points for each functional component creatively integrated into the game.

At the start of the game, the word "START" should appear on the LCD, and a Python program running on a laptop will play an audio message saying "Start", followed by background music during gameplay. When the player loses, the LCD will display "GAME OVER", and the Python program will play a voice message saying "Game Over".

Additionally, the player's score or play duration should be automatically sent and displayed on a Firebase real-time database screen.



## Challenge 5:

This project involves an AI-powered emotion detection system using a camera to recognize facial expressions in real time. Based on the detected emotion, the system reacts accordingly:

If a happy face is detected, a green LED lights up, a fan is activated, and a happy emoji appears on an LED matrix.

If a sad face is detected, a blue LED lights up and a sad emoji is displayed on the LED matrix.

If an angry face is detected, a red LED lights up and an angry emoji appears on the LED matrix.



# Task :

propose a prsentation for each project in it .

## 1. Propose a Presentation

Present the proposed project and its potential use in an industrial sector, using strong and convincing arguments.

How it would be used and why.

What innovation it introduces to the sector.

## 2. Project Requirements

List all materials required to complete the project, including:

Functional Arduino code.

Virtual wiring/simulation of the project.

if you add to you project additional compoints from the list of material extra points will be added to you

## 3. Pitching and Scoring

Prepare to pitch your project to a panel and receive a score based on presentation and innovation.

## 4. Realization Phase

You will be provided with the necessary materials to physically build and implement the project.

The prototyping can not take longuer then 30 min for each project



	score				
	Project 1	Project 2	Project 3	Project 4	Project 5
Cablage VRT	3	6	9	12	18
Code	3	6	9	12	18
Présentation Indust	2	4	6	8	12
Choix Matériels	2	4	6	8	12
Cablage reel	5	10	15	20	30
Mission Done	5	10	15	20	30
Total	20	40	60	80	100
BONUS	5	10	20	25	30