# AI voice recognition with ESP32 Technical design:

ESP32-S3 WROOM Pinout:  
A diagram of a pinout

Description automatically generated

INMP411 microphone connections to ESP32-S3:

|  |  |  |
| --- | --- | --- |
| INMP441 Pin | Function | ESP32-S3 pin |
| GND | Ground | Any ground pin |
| VCC | Power Supply (3.3V) | 3V3 pin |
| SD (DOUT) | Data out (Microphone Output) | GPIO9 (DOUT/SD) |
| WS | Word Select (Serial Word Selection) | GPIO7 (L/R) |
| SCK (BCLK) | Bit Clock | GPIO6 (BCLK) |
| L/R | Left/ Right Channel select | GND(left channel) |

Simple explanation of the functions of each connection:

1. SD (Data Out): This is the microphone’s data output pin. It is connected to GPIO9, which serves as the I2S Serial Data (SD) input for the ESP32-s3.
2. WS (Word Select): This pin control the left/right channel selection. It is connected to GPIO7, which is used for the I2S Word Select (WS) signal on the ESP32-S3.
3. SCK (Bit Clock): This is the bit clock signal for the I2S interface. It is connected to GPIO6, which serves as the I2S Bit Clock (BCLK) input for the ESP32-S3.
4. L/R (Left/Right Channel Selection): Pin that determines the microphone outputs to the left or right channel in the I@S frame.