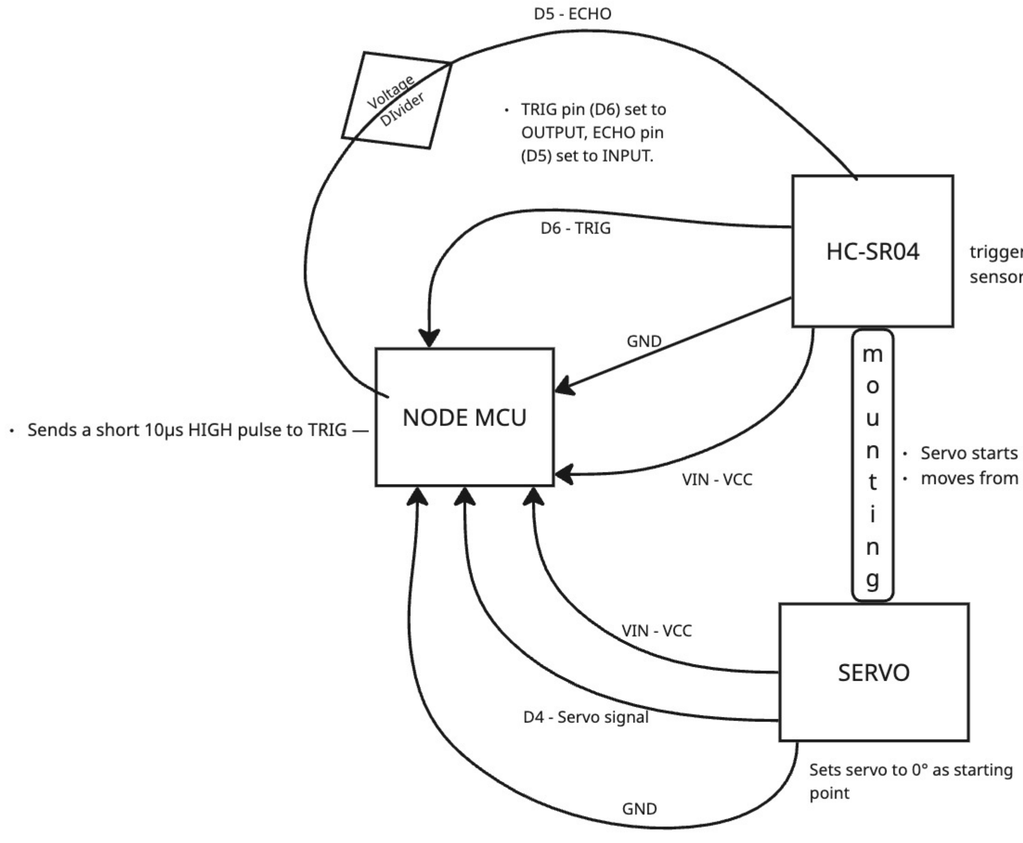
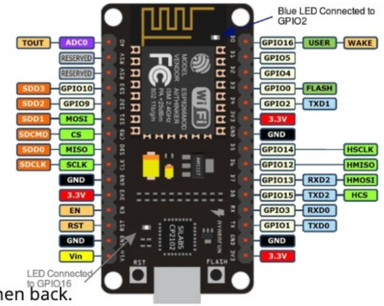
LiDAR A2 -> using NodeMCU ESP8266 and Ultrasonic sensor





the NodeMCU wakes up, twirls the head (servo) from left to right, shouting ultrasound pulses, and listens for the echoes. With each beep and echo, it notes, “At 30°, an obstacle at 120 cm.” Then “At 32°, clear,” and so on. Gradually a point cloud emerges, building the 2D layout around the sensor.
The hardware setup is shown above: the HC-SR04 (top right) and servo (bottom right) both connect to the NodeMCU on the left. As the system runs, it might send each (angle, distance) pair out over serial or Wi-Fi for display. For example, the classic Arduino–Processing radar demo simply prints “angle,distance.” Over the USB serial link, a Processing sketch reads these numbers and plots them as a green dot on a sweep, recreating a radar screen . In our case, the NodeMCU can likewise stream data either over its USB serial or via Wi-Fi (TCP/UDP or WebSockets).
Once the data is flowing, a connected computer or app can visualise the map in real time. On each loop, new points are drawn and old ones can fade or be replaced. The user sees obstacles appear as clusters of points at the correct angles and ranges.

	ULTRASONIC SENSOR	NODE MCU	SERVO	+
	VCC	VIN USB 5V		
	GND	GND	GND	
	TRIG	D6 (GPIO12) – trigger pin to output a 10 µs pulse…		
	ECHO [RESISTOR IN BETWEEN]	D5 (GPIO14) – echo pin via a 2.7 kΩ/4.7 kΩ voltage divider…		
		D4 (GPIO2) – servo control PWM signal…	SERVO signal	
		VIN (USB 5 V)	Servo VCC	

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