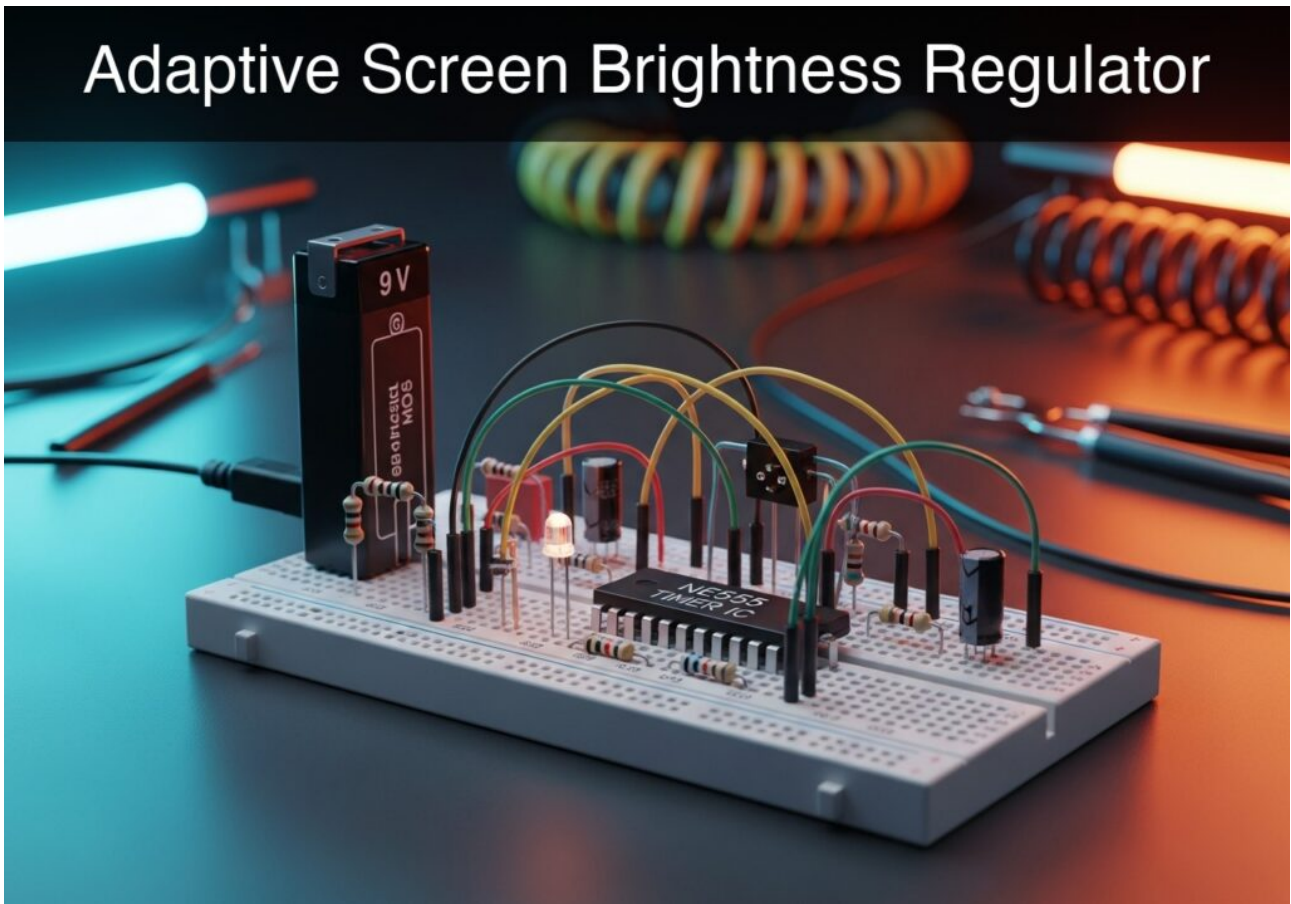


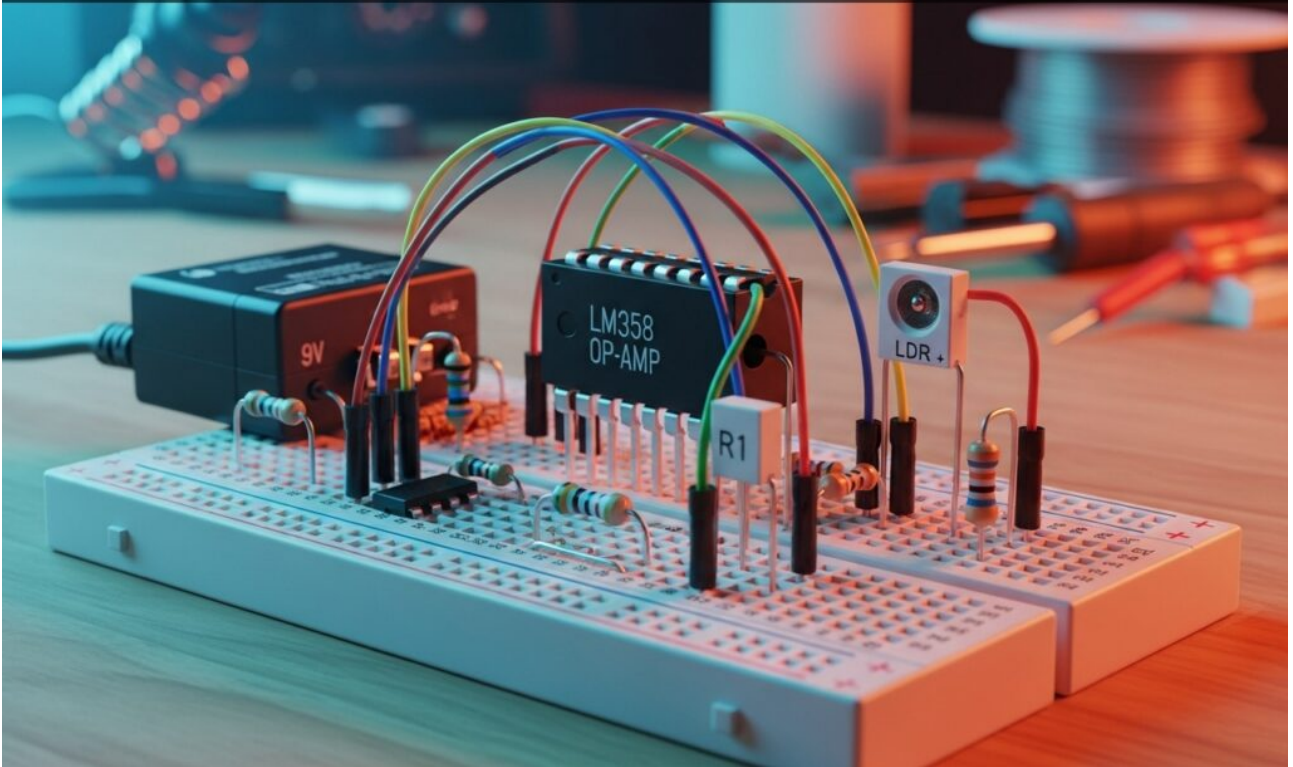
Practical case: Adaptive Screen Brightness Regulator



Master Analog Electronics by building a smart dimmer. Use a Photoresistor and 555 timer to auto-adjust LED brightness via PWM based on ambient light levels.

Practical case: Single-axis solar tracker

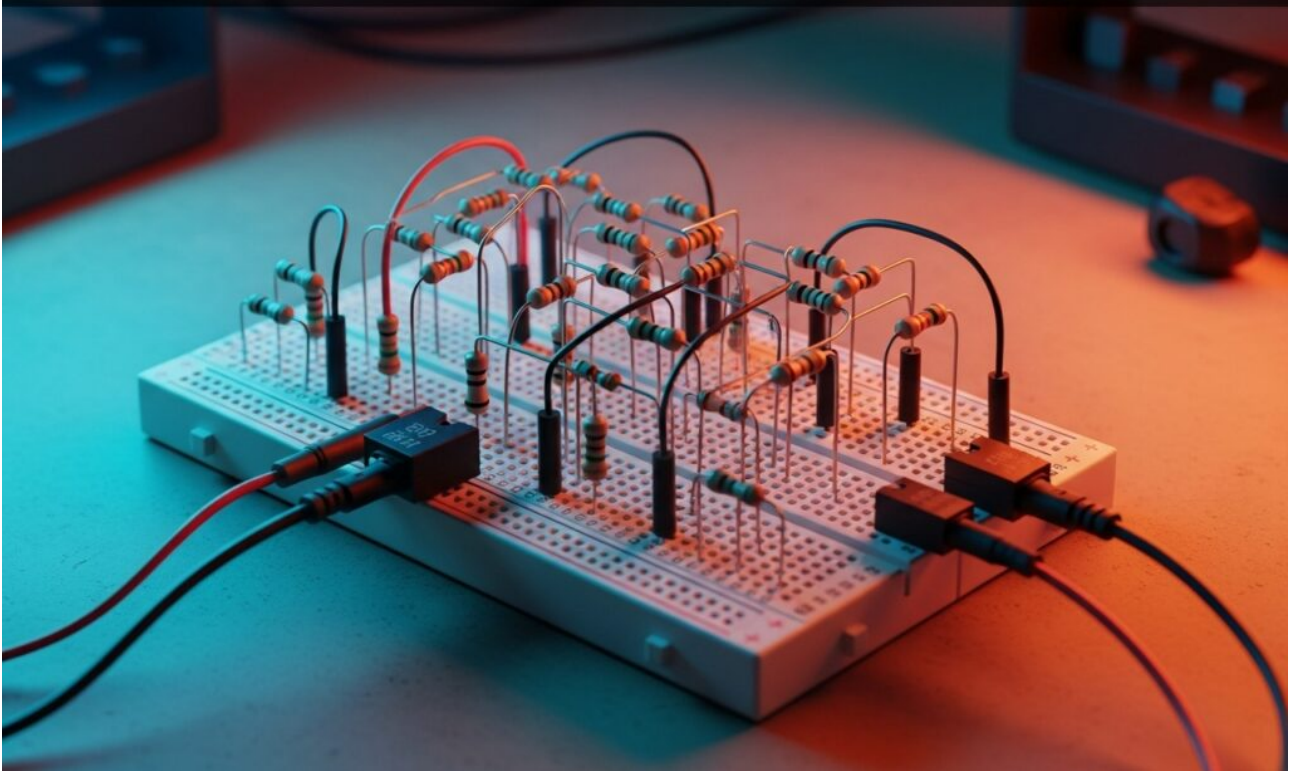
Single-axis solar tracker



Master Analog Electronics by building a sun seeker circuit. Use a Photoresistor pair to drive a motor that actively tracks the brightest light source.

Practical case: R-2R Resistor Network (Simple DAC)

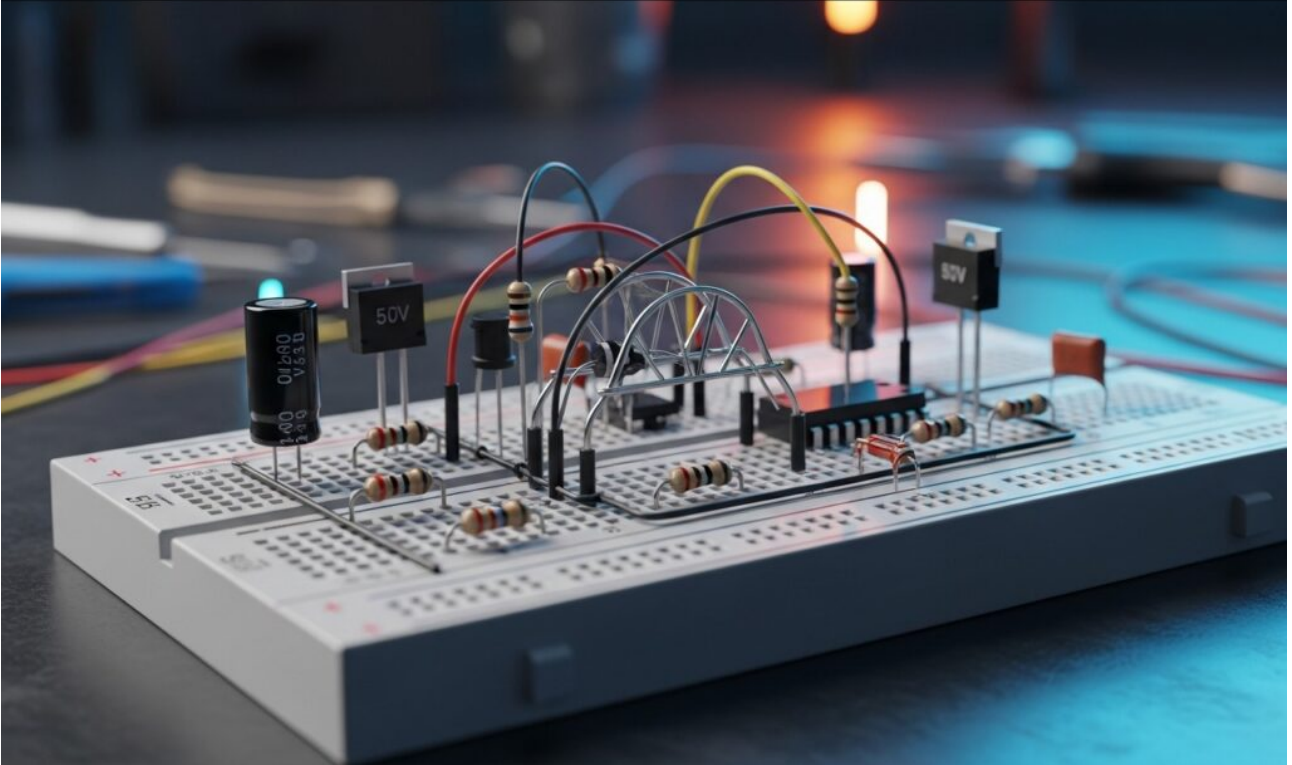
R-2R Resistor Network (Simple DAC)



Master Analog Electronics by building a 4-bit DAC using a Resistor ladder. Create precise voltage steps from binary signals for audio synthesis and control.

Practical case: Unbalanced Wheatstone Bridge

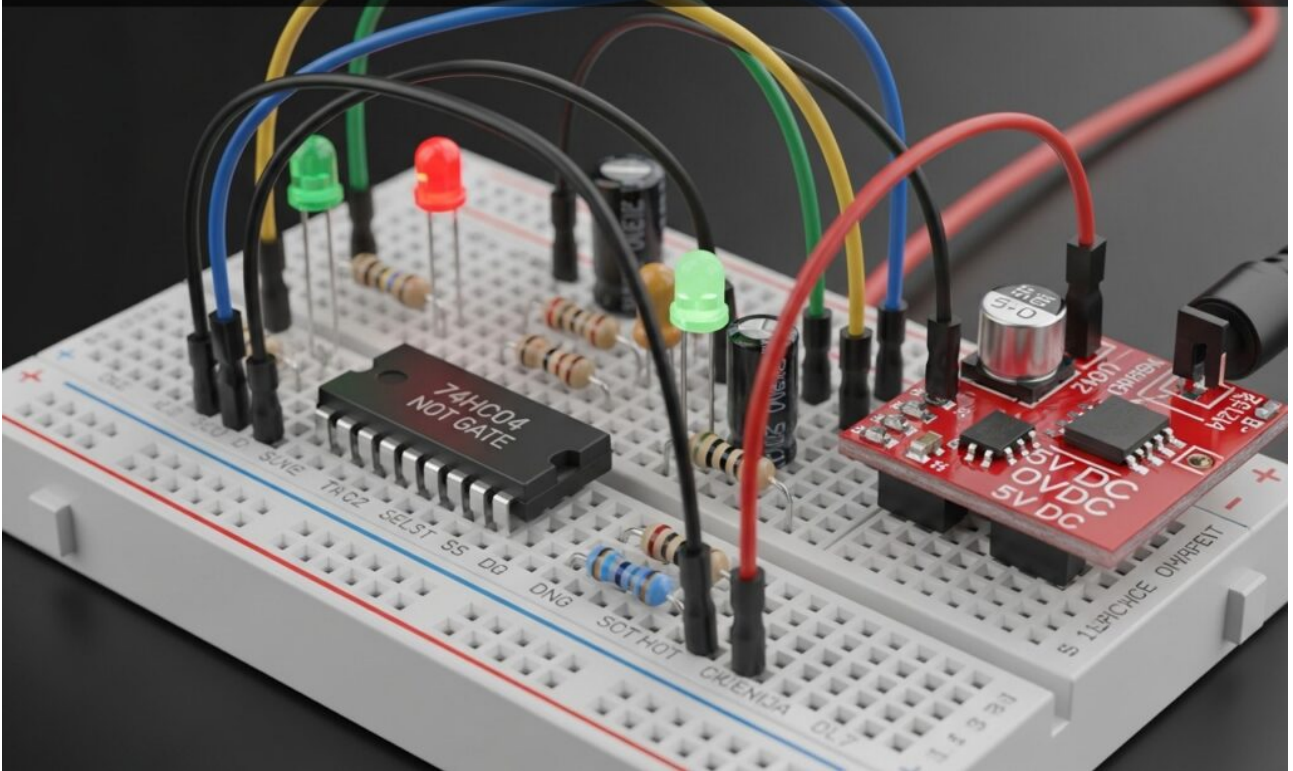
Unbalanced Wheatstone Bridge



Master Analog Electronics by building a Wheatstone bridge with a Resistor sensor. Measure precise differential voltage changes and calibrate zero-point offsets.

Practical case: Empty Tank Level Indicator

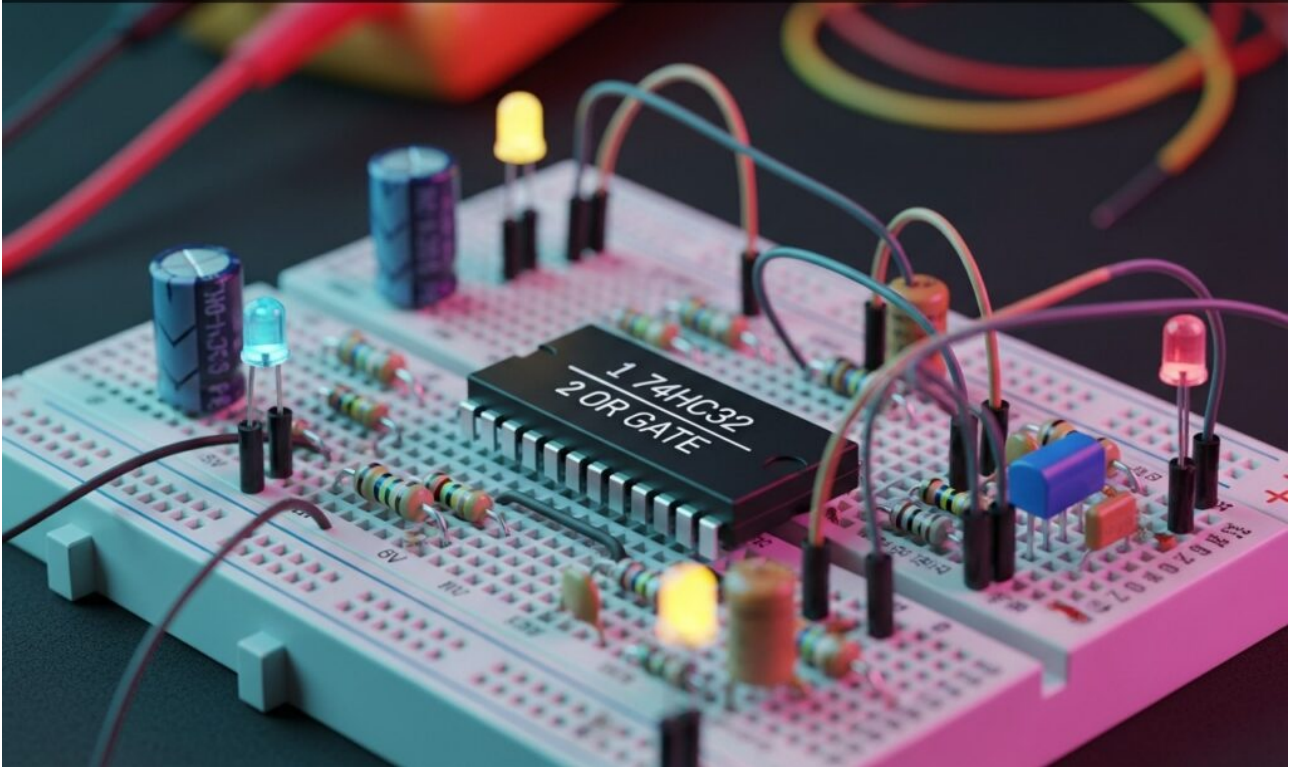
Empty Tank Level Indicator



Master Digital Electronics by building a water level alarm with a NOT gate. Design a circuit that lights an LED when tanks empty, preventing pump damage.

Practical case: Production Line Fault Monitoring

Production Line Fault Monitoring



Master Digital Electronics by building a safety circuit with an OR gate. Stop a conveyor belt instantly when temperature or jam sensors detect faults.