camera\_preview:

This C++ program sets the parameters of the camera, then reads and displays live footage of the Raspberry PI camera.

ecg\_processor:

This C++ program reads real-time ECG data via a serial port, applies IIR filtering and dynamic threshold-based R-peak detection to calculate heart rate (BPM), enabling continuous cardiac monitoring with live output.

guangmin:

This C++ program monitors a light sensor connected to GPIO16, continuously reading and displaying "Light" or "Dark" based on input.

pir\_sensor:

This C++ program monitors a PIR sensor on GPIO25, detects motion state changes (high/low) with debounce and logs status updates.

syn6288\_test:

This C++ program sends a predefined voice command via Raspberry Pi's UART (/dev/ttyAMA0) to a SYN6288 speech synthesis module, triggering playback of the phrase with serial configuration at 9600 baud.

ultrasonic:

This C++ program measures distance with an ultrasonic sensor (Trig GPIO23, Echo GPIO24) via echo pulse timing, logs results, and handles SIGINT for safe termination.

yuyin:

This C++ program sends a custom voice command via Raspberry Pi's UART to a SYN6288 speech module, including checksum calculation, to play a predefined Chinese phrase at 9600 baud.