dummy.rs — Development Simulator

The simulator generates realistic fake rover data so the UI can be developed and tested without physical hardware. It is started via the `start_dummy_streams` or `start_detection_sim` commands from `network.rs` and stopped with `stop_dummy_streams`.

Stream table

Each stream has an independent send interval and a generator function that produces time-varying data:

Stream	Interval	Notes
IMU	20ms (50Hz)	Sinusoidal accelerometer, gyro, magnetometer
GPS	200ms	Slow position drift around a fixed coordinate (52.2297°N, 6.8978°E)
pH	500ms	pH value oscillating around 7.0
Arm control signals	50ms	Simulated joint control inputs
Arm diagnostics	500ms	6 motors with dummy RPM/voltage
Arm feedback	100ms	Occasionally simulates an obstruction error
Arm positions	50ms	All joint angles oscillating
Arm target	200ms	Target XYZ + jaw state
Arm obstructions	300ms	
Drive diagnostics	500ms	6 drive + 4 steering motors
Drive motor	50ms	Distance to go, turning radius
Drive progress	100ms	Countdown from 10m
Sensor board diagnostics	500ms	Composite board health snapshot
Detected objects	50ms	Generates up to 12 bounding boxes for objects

Network simulation

The simulator can optionally apply **jitter** (random delay up to `jitter_ms`) and **packet loss** (random drop with probability `packet_loss`) to simulate real wireless conditions. The full simulator uses 30ms jitter and 2% packet loss; the IMU-only simulator uses no jitter or loss.

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