Sample Project 3: Experimental Performance Evaluation of Real-Time Traffic Scheduler in Control System

- **Objective**
  - Evaluate how **real-time traffic scheduling** improves control quality
  - Demonstrate results on a physical ball-floating testbed
- **Setup**
  - Raspberry Pi + Depth Sensor → Ball position monitoring
  - Raspberry Pi + PWM Fan → Ball position control
  - Ball-floating Testbed (pre-built), Pis communicate over Ethernet
- **Tasks**
  1. Implement PID controller to stabilize ball at target position
  2. Introduce network congestion and observe control degradation
  3. Apply real-time traffic schedulers and compare with baseline
     - e.g., Linux ETF scheduler / KeepON driver
- **Skills learned**
  - Understand Linux network stack and real-time system
  - C and Python Programming