2025-11-01

E018: Browser Automation and Testing

DIP-SMC-PSO Educational Series

January 25, 2026

Overview

This episode covers browser automation and testing from the DIP-SMC-PSO project.

Part: Part4 Professional
Duration: 15-20 minutes
Source: Comprehensive Presentation Materials

section0   Fault Detection & Isolation (FDI)

Monitoring Anomalous Behavior:
    Detected Faults:
    - **Sensor Faults**
    - State measurement out of physical range - Sudden jumps (¿ 3 from trend) - Stuck sensor (constant value)
    - **Actuator Faults**
    - Control saturation (persistent $|u| = u_{\max}$) - Actuator deadband (zero response region) - Reduced effectiveness (partial failure)
    - **Controller Faults**
    - Numerical instability (NaN/Inf in control) - Excessive chattering (¿ threshold frequency) - Sliding surface divergence
    - **System Faults**
    - Deadline misses exceeding threshold - Memory leak detection (growing allocations) - Communication timeout (HIL mode)

Resources

- **Repository:** `https://github.com/theSadeQ/dip-smc-pso.git`

- **Documentation:** See `docs/` directory

- **Getting Started:** `docs/guides/getting-started.md`

Educational podcast episode generated from comprehensive presentation materials