Fault Diagnosis, Fault-tolerant Control, and Cooperative Control of Manned and Unmanned Aircraft Systems

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Outline of the Tutorial

1. 08:30 - 09:05  Introduction to Fault-tolerant Control and Cooperative Control: Motivation, Concept, History, Existing and Future Developments (Dr. Zhang)

2. 09:05 - 09:40  Developments on Fault Diagnosis, Fault-tolerant Control and Cooperative Control with Applications to Fixed-wing and Quadrotor UAVs Testbeds (Dr. Zhang)

3. 09:40 - 10:15: Iterative Design Towards Improved Fault Tolerance: A Framework for Improved SUAS Airworthiness (Dr. Chen)

   10:15 - 10:30  Coffee Break/Networking

4. 10:30 - 11:05  Sliding Mode Schemes for Fault Detection and Fault Tolerant Control (Dr. Edwards)

5. 11:05 - 11:40  $\mathcal{H}_\infty$ Detection, Isolation and Tolerant Control: A Tutorial on Aerospace Applications (Dr. Marcos)

6. 11:40 - 12:15  Reconfigurable Flight Fault Tolerant Control for Nonlinear Unmanned Aerial Vehicle (Dr. Patton)

12:15 - 13:30  Lunch
Outline of the Tutorial

7. 13:30 - 14:05 Nonlinear Fault Diagnosis and Fault Tolerant Control Schemes for Aerospace Applications (Dr. Castaldi and Dr. Simani)

8. 14:05 - 14:40 Design of Fault-tolerant Control Methods Based on Reliability (Dr. Theilliol & Dr. Zhang)

9. 14:40 - 15:15 Multiple UAS Operations: Toward Verifiable Autonomy (Dr. Tsourdos)

15:15 - 15:30 Coffee Break/Networking

10. 15:30 - 16:05 Fault Diagnosis and Tolerant Control of Aerospace Systems using LPV Techniques (Dr. Puig)

11. 16:05 - 16:40 Fault Diagnosis and Fault Tolerant Control for Civil Aircraft: Industrial State-of-Practice for Flight Control Systems (Dr. Goupil)

16:40 - 17:00 Summary, Discussion, and Feedback (All)