

**IFAC SAFEPROCESS 2027 List of Keywords**

<b>AI-enhanced FDI methods</b>	<ul style="list-style-type: none"> <li>Integrated model and data based FDI</li> <li>Knowledge discovery</li> <li>Physics-informed learning FDI</li> <li>Knowledge-based diagnosis</li> </ul>
<b>Data-driven diagnosis methods</b>	<ul style="list-style-type: none"> <li>Machine learning based FDI</li> <li>Deep learning based FDI</li> <li>LLM based FDI</li> <li>Safe learning</li> <li>Hybrid model learning</li> <li>Anomaly detection</li> <li>System identification</li> </ul>
<b>Model-based fault diagnosis</b>	<ul style="list-style-type: none"> <li>Event and fault detection</li> <li>Fault isolation and root cause analysis</li> <li>Linear model based FDI</li> <li>Nonlinear model based FDI</li> <li>Structural analysis methods</li> <li>Set-membership FDI methods</li> <li>FDI for discrete event systems</li> <li>Logic model based diagnosis</li> </ul>
<b>Statistical methods</b>	<ul style="list-style-type: none"> <li>Filtering and change detection</li> <li>Filtering and estimation</li> <li>Signal and identification-based methods</li> </ul>
<b>FDI and FTC Architectures</b>	<ul style="list-style-type: none"> <li>Distributed</li> <li>Decentralized</li> <li>Coordinated</li> <li>Event-driven</li> <li>Multi-agent</li> </ul>
<b>Properties for diagnosis</b>	<ul style="list-style-type: none"> <li>Diagnosability analysis</li> <li>Predictability</li> <li>Detectability and Manifestability</li> </ul>
<b>Explanation and Diagnosis</b>	<ul style="list-style-type: none"> <li>Anomaly and incident explanation</li> <li>Diagnosis explanation</li> </ul>
<b>Condition and health monitoring</b>	<ul style="list-style-type: none"> <li>Test selection</li> <li>Active diagnosis</li> <li>Structural health monitoring</li> </ul>
<b>Prognostics and predictive maintenance</b>	<ul style="list-style-type: none"> <li>Remaining useful life (RUL) prediction</li> <li>Degradation modeling</li> <li>Physics-based vs data-based prognostics</li> <li>Predictive maintenance strategies</li> <li>Maintenance policies</li> <li>Strategies for ageing and deterioration</li> </ul>
<b>Safety and security by design</b>	<ul style="list-style-type: none"> <li>Fail-Safe Mechanisms</li> <li>Safety Assurance</li> <li>Redundancy and resilient architectures</li> <li>Proactive risk assessment</li> </ul>
<b>Cybersecurity for cyberphysical systems</b>	<ul style="list-style-type: none"> <li>Attack detection</li> <li>Attack isolation</li> <li>Attack mitigation</li> <li>Attack prevention</li> </ul>
<b>Fault-tolerant and resilient control</b>	<ul style="list-style-type: none"> <li>Fault tolerant estimation</li> <li>Fault accommodation</li> <li>Reconfiguration strategies</li> </ul>
<b>Health-aware control</b>	<ul style="list-style-type: none"> <li>Control and Health Monitoring co-Design</li> <li>Self-healing control</li> <li>Health-aware optimization</li> </ul>
<b>Reliability, availability, maintainability and safety</b>	<ul style="list-style-type: none"> <li>Reliability and risk analysis</li> <li>Reliability Engineering</li> <li>Reliability Centered Maintenance</li> <li>Availability Modeling</li> <li>Design for maintainability</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>Transportation systems</li> <li>Intelligent autonomous vehicles</li> <li>Robotics</li> <li>Automotive</li> <li>Aerospace</li> <li>Network systems</li> <li>Mechatronic systems</li> <li>Marine systems</li> <li>Chemical processes</li> <li>Mining, Mineral and Metal Process</li> <li>Power plants and power systems</li> <li>Energy systems</li> <li>Education</li> <li>Other applications</li> </ul>