



DIAGNOSTIC ET SÛRETÉ DE FONCTIONNEMENT

DIAGNOSIS AND HEALTH MONITORING

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| Lecturers : 16.0 | TC : 0.0 | PW : 0.0 | Autonomy : 0.0 | Study : 12.0 | Project : 0.0 | Language : FR

Objectives

To detect failure before they appear is a big challenge for any kind of complex systems. From modern car full of automation (sensors, actuators, control/command strategies) to more-electric airplanes, from industrial power plant to robotics applications, methods are needed to inform that a failure or default as appeared, appears or will appear.

That course will focus on automatic detection methods based on model-based approaches or artificial intelligence approaches.

Keywords : Diagnosis, health monitoring, identification, pattern recognition, FMECA

Programme

Context

Fonctional approaches like FMECA (Failure Modes, Effects and Criticality Analysis)

Reliability

Diagnosis approaches:

- model-based
 - identification
 - error detection
- artificial intelligence
 - pattern recognition

Learning outcomes

- To realise challenges and difficulties associated with health monitoring
- To be able to applied pattern recognition techniques
- To be able to properly identify mathematical model for diagnosis purposes
- To be able to select parameters identification methods

Independent study

Objectifs :

3 times 4h BE using Matlab (good knowledge of Matlab is a must)

Méthodes :

Core texts

Bernard Dubuisson, *DIAGNOSTIC, INTELLIGENCE ARTIFICIELLE ET RECONNAISSANCE DES FORMES*, Hermès Science Publications, Collection : ic2 prod, 2001

Bernard Dubuisson *DIAGNOSTIC ET RECONNAISSANCE DES FORMES*, Traité des nouvelles technologies. Série diagnosti, 1990

Alain Villemeur *SÛRETÉ DE FONCTIONNEMENT DES SYSTÈMES INDUSTRIELS*, Edition Eyrolles, 1988

Assessment

Final mark = 50% Knowledge + 50% Know-how

Knowledge = final exam

Know-how = average mark issued from 3 reports from BE