UE Introduction à l'IA : SISO Feedback control

Niveau d'étude
Bac +4

ECTS
3 crédits

Composante
UFR Physique, Ingénierie, Terre, Environnement, Mécanique (PhITEM)

Période de l'année
Printemps (janv. à avril/mai)

Diplômes intégrant cet élément

- Master Electronique, énergie électrique, automatique

Langue(s) d'enseignement: Anglais
Ouvert aux étudiants en échange: Oui
Code d'export Apogée: PAX8EEAA

Présentation

Description

1/ Control system design and linear models

The process of control system design; The control problem; Transfer functions; Scaling; Deriving linear models; Control configurations.

2/ Feedback control and closed-loop performances

Frequency response; Feedback control; Closed loop stability; Evaluating closed loop performance.

3/ Controller design - from tuning to shaping the closed-loop

Classical controller design: tuning rules; Loop shaping; IMC design procedure and PID control for stable plants; Shaping closed loop transfer functions.

Informations non contractuelles.
Dernière mise à jour le 04 novembre 2026

4/ Input-output controllability and perfect control

Input-Output Controllability; Fundamental limitations on sensitivity; Perfect control and plant inversion; Ideal ISE optimal control.

5/ Fundamental limitations

Limitations imposed by time delays, RHP-zeros, phase lag and unstable (RHP) poles; Perf. requirements imposed by disturbances and commands; Limitations imposed by input constraints and uncertainty; Controllability analysis with feedback & feedforward control.

Heures d'enseignement

UE SISO Feedback control - CM	CM	15h
UE SISO Feedback control - TD	TD	9h
UE SISO Feedback control - TP	TP	15h

Période : Semestre 8

Infos pratiques

Campus

Grenoble - Polygone scientifique

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