Robotique industrielle (MCTR920_GICMMI)

Composante
POLYTECH
2026-2027

En bref

› **Méthodes d'enseignement:** En présence

› **Ouvert aux étudiants en échange:** Oui

Présentation

Description

The class will focus on direct and inverse kinematics problem, Denavit-Hartenberg representation, Euler and RPY angles, homogeneous transformations, Manipulator Jacobian, differential relationships, force and moment analysis.

Objectifs

The objective of this course concerns Industrial Robotics and the ability to choose a robot according to the expected tasks and industrial context. It will also cover the various models needed to understand the operation of an industrial robot (typical architectures, characteristic quantities, modeling and model inversion), its behavior, the description of end-effector motion in space, and the minimum knowledge required to design and size the actuators that make up the robot.

Heures d'enseignement

CM	Cours Magistral	26h
TD	Travaux Dirigés	6h
TP	Travaux Pratiques	8h

Pré-requis obligatoires

MATH501_PACY

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MATH620_MIMC
Python programming language

Plan du cours

1. Historical Context, Types, Applications and Basic Concepts in Robotics
2. Structure and Components of Roobot Manipulators
3. Spatial Representations of Rigid Bodies
4. Forward Kinematics of Robot Manipulators
5. Inverse Kinematics of Robot Manipulators
6. Differential Kinematics

Compétences visées

Mastering engineering methods and tools: identifying, modeling and solving even unfamiliar and incompletely defined problems, using IT tools,
Mastering engineering methods to model and design robotized industrial production systems
Taking into account the challenges and needs of a company
Mobilizing the resources of a scientific and technical field related to a specialty

Bibliographie

[1] Siciliano B. Robotics : modelling, planning and control. Springer 2009.
[2] Spong M, Hutchinson S, Vidyasagar M. Robot Modeling and Control. wiley ed. 2005.

Libellé court : MCTR920_GICMMI

Nature : MODULE

Infos pratiques

Lieux

> Annecy-le-Vieux (74)

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