Robotics

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Contents

A mix of mechanical engineering and control theory.

Presentations & Lecture Notes

Slides for some MAREVA[1] courses.

Elements of Lagrangian Mechanics - Applications to Mobile Robotics

Typologie des Robots Mobiles (in French)

Coriolis and Centrifugal Forces

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On Wheels

The only wheels considered in the document Elements of Lagrangian Mechanics - Applications to Mobile Robotics are either fixed or orientable with a swivel axis that goes through the wheel center. Why? Because these wheels add kinematics constraints to the mobile robot and restrict its possible trajectories.

[1] MAREVA is the Applied Mathematics Minor of MINES ParisTech "Master's in Science and Executive Engineering" degree.

It is sometimes necessary to use wheels that do not have this unfortunate effect; this is for example mandatory to design omnidirectional robots. Two example categories are *caster wheels* and *swedish (or Mecanum) wheels*:

Kinematics of Caster Wheels

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Caster Wheel Interactive Demo

Swedish Wheels

Control Theory

Some ISIA[2] courses (in French).

Robots Mobiles

Représentation d'Etat des Systèmes Linéaires.

Automatique et Calcul de Fourier-Laplace

L'Approche Fréquentielle

Introduction aux Systèmes à Temps Discret

Free Resources

Lagrangian Dynamics by Miloš Žefran and Francesco Bullo

[2]ISIA was a post-graduate education program of MINES ParisTech dedicated to control theory and computer science.