ISEN | école d'ingénieurs
ALL IS DIGITAL!

Systèmes robotisés intelligents
Smart Robotic Systems

Robot control

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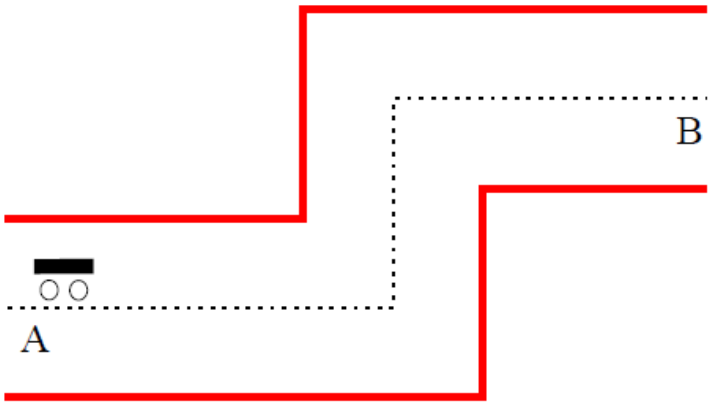
Robot control

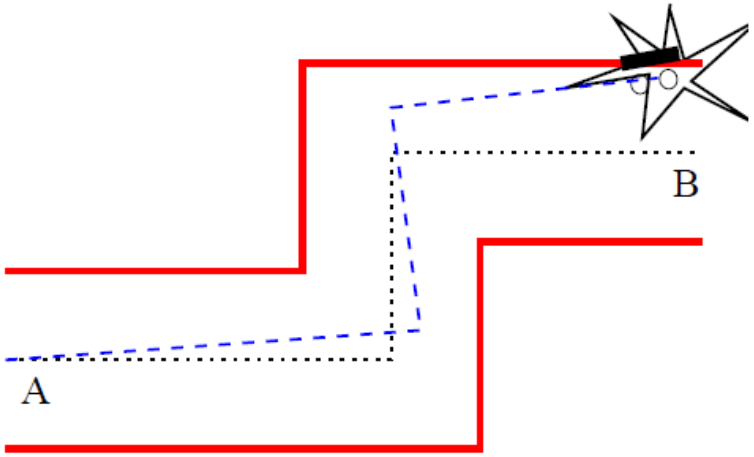
Lateral control

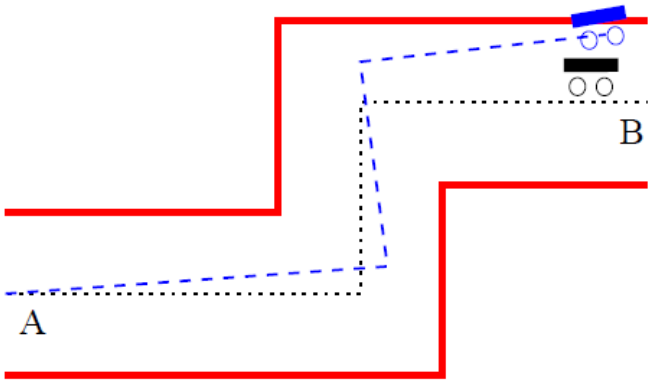
Longitudinal control

Control techniques:

- Classic control
- Sensor based control



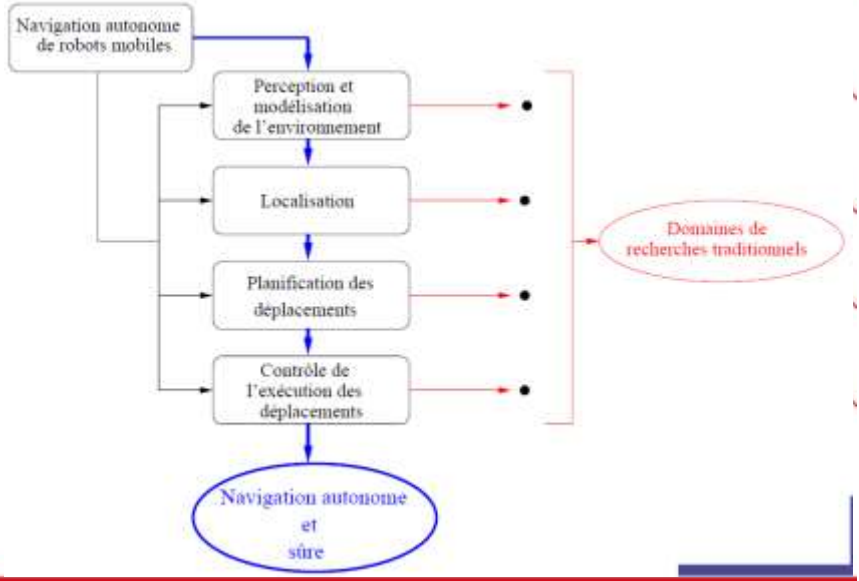




Robot control

Classic control

- PID controllers
- State feedback controllers [Abbassi et al., 2011]
- Fuzzy logic controllers [Naranjo et al., 2003]
- Model predictive control [Falcone et al., 2007]
- Sliding mode control [Tagne 2013]
- Control without a model [D'Andréa-Novel et al., 2011]
- Inverse model control [Kim et al., 2011]
- Linear Quadratic (LQ) control



Robot control

- Sensor based control

Sensor-based control in the Cartesian Space

- step1 : The robot acquires sensor data on the scene,
- step2 : a model of the environment is built,
- step4 : the current cartesian position $X(t)$ of the robot is estimated,
- step5 : the robot's controller regulates to zero the error function $e(t) = X(t) - X^*(t)$ where $X^*(t)$ is a reference trajectory defined in the Cartesian space.

Examples:

- Vision based control
- Force based control