

Master 2 Systèmes Dynamiques et Signaux

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Title	Plath planning for an UGV with a robotic arm
Keywords	Mobile robotic, path planning, interval analysis
Laboratory	LARIS, University of Angers
Team	Systèmes Dynamiques et Optimisation (SDO)

Context

This work aims to be an introduction to a thesis funding with the CEA. In the thesis, the aim will be to calculate an admissible solution for a trajectory of a wheeled mobile manipulator. This solution has to be computed in a sufficiently reasonable time so that the trajectory generation method can be used on-line. To achieve this, the PhD student will build on the work carried out at CEA during José Mendès-Filho's thesis [1], on the dynamic generation of trajectories on a sliding horizon expressed in the form of Béziérs splines. This approach will be enriched by work carried out at LARIS on interval calculation methods, which will guarantee compliance with constraints, even for a sub-optimal solution [2].

Objective

A wheeled mobile manipulator is a robotic system that consists of a standard robot manipulator mounted on a mobile platform. This system integrates the dexterity provided by the manipulator with the extended workspace provided by the platform. Therefore, mobile manipulators are suitable to perform delicate tasks over a large space, such as welding large parts or painting large, curvy surfaces.

This master internship will be a primary work for the thesis introduced in the previous section. The objective will be to review the state of art of the approaches considered when working on wheeled mobile manipulators trajectory planning.

Bibliography

[1] Mendes Filho, José. Online Distributed Motion Planning for Mobile Multi-robot Systems. Diss. Institut polytechnique de Paris, 2019. [pdf](#)

[2] Jaulin, Luc. Mobile robotics. John Wiley & Sons, 2019.