

## عنوان مقاله:

Optimal Trajectory Planning for Flexible Mobile Manipulators under Large Deformation Using Meta-heuristic Optimization Methods

## محل انتشار:

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## خلاصه مقاله:

In present paper, a point to point optimal path is planned for a mobile manipulator with flexible links and joints. For this purpose, a perfect dynamic modeling is performed for mobile manipulators considering large deformation in links, shear effects, elastic joints, effect of gravitation, and non-holonomic constraints. To study large deformation of links, non-linear relation of displacement-strain and Green's strain tensor are used. Optimal path is planned based on direct methods and applying meta-heuristic optimization methods. In order to get an optimal path profile, maximum load carried by manipulator and minimum transmission time are considered as the objective functions for optimization problem. To provide the parameters of optimization problem, parametric optimization problem is solved using Harmony Search (HS) and Simulated Annealing (SA) efficient methods. In order to investigate the efficiency of the proposed method, simulation studies are performed considering two-link flexible manipulator with wheeled base. The results indicate that the proposed method has a suitable power and performance when facing dynamics non-linear system. Moreover, the results of path planning for manipulators by small and large deformation models are also compared. The effect of flexibility in joints is studied when planning a point to point path.

## کلمات کلیدی:

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