

## عنوان مقاله:

Fuzzy Path Planning in a Plane With Fixed Obstacles

## محل انتشار:

اولین کنگره مشترک سیستم های فازی و سیستم های هوشمند (سال: 1386)

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## خلاصه مقاله:

In this paper a new approach for finding optimal path planning in a plane with fixed obstacles is discussed. We consider a movable rigid body in a plane with fixed obstacles. The goal is to find the optimal path which brings rigid body from a given initial point to a given final point such that the length of path is minimum and the distance between rigid body and obstacles is maximum. By considering the length of path and the distance between rigid body and obstacles as objective functions, we obtain a multi-objective problem. Because of the imprecise nature of decision maker's judgment, these multiple objectives are viewed as fuzzy objectives. Then we determine intervals for the optimal value of objective functions such that these intervals for the distance between rigid body and obstacles are given and for the length of path is achieved by solving two optimal non-linear programming problems (ONPP). Now, we define a strictly monotonic decreasing or increasing membership function as degree of satisfaction for any objective functions on achieved intervals. Then the optimal policy is to find an optimal path which maximize all of membership functions, simultaneously. Thus, we obtain an ONPP which gives a (local) Pareto solution for original goal. Numerical example is also given

## کلمات کلیدی:

Optimal path planning; Multi-objective; Membership function; Pareto optimal

## لینک ثابت مقاله در پایگاه سیویلیکا:

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