

Topological Mobile Robot Environment Representation

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Abstract: This paper describes environment representations, used by mobile robots with focus on topological representation. The environment could be known by mobile robot, i.e. the environment map is known. Or the environment map is build through exploration of unknown environment. Environment representations, let us say maps are of three basic types - metric, topological or hybrid. Metric map represent geometrical relations of objects in environment, hence is more precise like topological representation.

Topological representation is more convenient for planning and tasks execution. This paper deal with topological representation, their building and with them linked problems. One of the main problems not even during map building even by using of pre build map is localization problem. In case of topological-like maps, it is the problem of identification the actual robot occurrence place within map. For robot occurrence place identification are used combinations of more methods, e.g. landmarks selection, detection and recognition, history of occurrence places, triangulation.