ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
ARTIFICIAL INTELLIGENCE

MASTER THESIS

in

Natural Language Processing

# Graph-Based Keyword Extraction from Scientific Paper Abstracts using Word Embeddings

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# Abstract

This paper deals with path planning for robot manipulators using sampling-based algorithms in a configuration space equipped by a specific cost function. The key algorithm used for path planning is the T-RRT algorithm which is a modification of the basic RRT algorithm. The T-RRT algorithm searches for a path which spans over the regions of the configuration space costmap which represent "passes", "canyons" and "valleys" i.e. regions which have a low cost, while it tends to bypass high cost regions. Using a convenient cost function, which models the problem's criterion, with the T-RRT algorithm we get paths which fulfill the stated criterion while the RRT algorithm, in the general case, is not able to carry out such a task. An example of a criterion which we are going to use is the requirement for the tip of the manipulator to be at the furthest possible distance from the obstacles in the working space which ensures its safety.

The parameters which are integrated inside the T-RRT algorithm influence its performance and the final shape of the path so a great number of simulations was conducted, with various types of robot manipulators, to analyze the influence of individual parameters on the path. These examples were compared with the shapes of paths obtained with the RRT algorithm. All the algorithms have been implemented within the MATLAB programming package.

**Keywords**:

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# 1 Introduction

Hello

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