Bounded Diverse Paths and their application in Path Planning

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Abstract We present a formal definition of Bounded Diverse Paths and how this approach can be applied in Path Planning.

Our approach rests on principles of Digital Imagery as well as Optimal Control. We show its application to a practical problem, such as how to find diverse paths.

1 Introduction

Homotopy, for our purposes is a hard concept to grasp in 3D

2 Related Work

Here we can cite work of Likhachev et al, and stuff about Distance Transform such as the work of Pedro Fzelnzab as well as the application of Distance Transforms to Path Planning, although its goal was different than ours

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2.1 Homotopy classes

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2.1.1 Homotopy in 2D spaces

Problem pretty much solved by Stilman and Likhachev

2.1.2 Homotopy in 3D spaces

Why it is hard

3 Definitions

Definition 1. A *function f* is a rule of correspondence that assigns to each element **q** in a certain set $\mathscr{D}$ a unique element in a set $\mathscr{R}$. $\mathscr{D}$ is called the *domain* of f and $\mathscr{R}$ is the *range*

References

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