

The Reachability Problem in Constructive Geometric Constraint Solving Based Dynamic Geometry

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Abstract An important issue in dynamic geometry is the reachability problem that asks whether there is a continuous path that, from a given starting geometric configuration, continuously leads to an ending configuration. In this work we report on a technique to compute a continuous evaluation path, if one exists, that solves the reachability problem for geometric constructions with one variant parameter. The technique is developed in the framework of a constructive geometric constraint-based dynamic geometry system, uses the A^* algorithm and minimizes the variant parameter arc length.

Keywords Dynamic geometry · Constructive geometric constraint solving · Reachability

1 Introduction

Reachability is a fundamental problem in the context of many models and abstractions which describe various computational processes. Analysis of the computational traces and predictability questions for such models can be formalized as a set of different reachability problems. In general reachability can be formulated as follows: Given a computational system with a set of allowed transformations, also called

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