

Publication

A box-based distance between regions for guiding the reachability analysis of SpaceEx

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A recent technique used in falsification methods for hybrid systems relies on distance-based heuristics for guiding the search towards a goal state. The question is whether the technique can be carried over to reachability analyses that use regions as their basic data structure. In this paper, we introduce a box-based distance measure between regions. We present an algorithm that, given two regions, efficiently computes the box-based distance between them. We have implemented the algorithm in SpaceEx and use it for guiding the region-based reachability analysis of SpaceEx. We illustrate the practical potential of our approach in a case study for the navigation benchmark.

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