

Advanced computational geometry for proximity queries of convex polyhedras

Abstract

This paper summarizes the prominent algorithms for computing the minimum distance between convex polyhedras. These algorithms are used in various areas such as path planning, collision detection, haptic interaction, virtual reality, etc. The algorithm of Gilbert-Johnson-Keerthi (GJK) and the algorithm of Lin-Canny (LC) are well known fast solutions to the problem. An hybrid approach which was proposed by Sundaraj-Mazer (SM) has also been shown to produce satisfactory results in terms of speed and accuracy. A review of these algorithms and their variations are presented. A critical analysis of these algorithms is also presented.