Abstract

Axis Aligned Bounding Box (AABB) is the simple method for object collision detection, but it has limitation in detection process. In decades, some better methods have been generated such as Oriented Bounding Box (OBB) and HPCCD. Unfortunately, these methods are not used in DVE. This paper aims to analyze why most DVEs still use AABB in detecting objects collision in the environment. This research begins with developing the suitable DVE. The DVE should make many users collaborate with each other, and it has physics activities such as gravity pole, movement, etc. Each user is able to create objects and they should be visible to other users. To detect the object collision, AABB is implemented in the DVE. Further, to analyze the collision detection process and the performance of DVE, there are two parameters used, i.e. runtime and frame rate of simulation application. The experiment results show that adding the computation workload into AABB on DVE increases the runtime significantly compared with regular application. The lack of performance is also shown by the application frame rates in which strictly decrease so that the DVE performance degrades.

Index Terms

Computer Science  Distributed Systems
Keywords

AABB  Collision detection  Distributed Virtual Environment