

PROJECT INTRODUCTION

Objectives

To develop a novel and advanced modelling and animation technology: Disk and Ball B-Spline (DBBS).

Project Investigator / Manager

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Period of Project

Sep 2005 – Aug 2007

Website

www.ntu.edu.sg/camtech/cag

Abstract

This project aims to produce more realistic motion of characters (humans, animal, etc.) for feature film, cartoon animation and the game industry. The model, either 2D or 3D, can be distributed to the Grid for rendering. Given that a smooth animated motion requires about 25 frames per second and a feature film can easily consist of hundreds of thousands of frames, the animation productivity will be significantly increased with DBBS over the Grid.

PROJECT DETAILS

Description

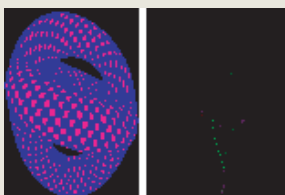
The DBBS is a novel and advanced modelling approach for computer graphics and animation. Compared to current primary representation models like triangle mesh and NURBS, DBBS has several advantages.

1. It has solid mathematical fundamentals, which gives a precise evaluation of some properties of a model.
2. It presents all points of a region and the centreline (or skeleton) of the region.
3. It is a continuous model, which has a compact dataset and is able to transmit and display any local shapes at any resolution.

Examples on modelling 2D and 3D objects with DBBS are shown below.



(a) 2D brushstroke



(b) 3D curve



(c) 3D surface

Applications over the Grid

DBBS and its applications can be scaled, optimised and ran across the Grid platform to take advantage of the Grid Engine.

A feature film like Lion King has in excess of 100,000 frames. An enormous amount of computation power is required to handle such a big volume of data. With the Grid platform, the proposed project may make full use of the resources available by sending a number of frames to the Grid. This will not only speed up the whole production of animation, but also save on a large amount of manpower that may otherwise be used to draw and/or paint individual frames, one at a time.

An application structure is illustrated below

