4

11:15 - 11:45

Rounding And Blending A Solid

Shay Dekel
ScanVec Ltd.

Most Solid Modelers today have Rounding and Blending functionalities. Usually the user can define a constant radius or a variable radius function on edges of the Solid he/she wishes to round and the application automatically replaces these edges with round surfaces, creates blend surfaces in vertices of the Solid where the round surfaces "meet" and produces "extensions" to the rounding operations so the Solid is left in a legal "closed" state. We will present the framework of such functionality and concentrate on two main algorithms: 1. Improved (Variable) Round NURBS Surface using the Rational B-Spline representation of arcs. 2. Creating a Blend Surface using the Finite Element Method.

5

11:45 - 12:15

Indigo2 Impact Graphics - Texture Mapping on the Desktop

Jacky Romano
Silicon Graphics (Israel) Ltd.

The talk will concentrate on the architecture of the Impact Graphics boards. We will discuss their performance characteristics and show techniques of using the texture mapping functionality in interesting ways, such as reflections, volume rendering, Phong shading, and projected textures.

6

12:15 - 12:45

Novel-View Synthesis from a Collection of Perspective Views for the Purpose of Image-Based Rendering

Shai Avidan
Hebrew University

The speaker will present a new method for synthesizing novel views of a 3D scene from three reference images and their trilinear tensor. No use of a 3D model of the scene is made, nor any use of camera geometry (relative locations of the cameras) of the three views is required - only the computation of the trilinear tensor. The novel views are modeled by specifying rotation and translation of the virtual camera starting from one of the reference views, which is an ideal "driving" mode for generating a synthetic movie. The synthesis process is governed by a simple equation (relating the model tensor and the new tensor) in which the user-specified virtual camera is plugged in, followed by a warping step; hence, the only time consuming component in this process is image warping. The virtual camera can be anywhere in 3D, and the quality of the synthesized images is limited only by the quality of the (dense) correspondence between two of the reference images and the amount of self-occlusions in the scene.

This invitation is an entry permit for your car at gate 4 of the Tel-Aviv University campus.

INVITATION

ISRAEL SIGGRAPH PROFESSIONAL CHAPTER MEETING

Sponsored by

Silicon Graphics (Israel) Ltd.

8:30 - 12:45

January 26, 1996

Lev Hall (near Shenkar Bldg.)

Tel-Aviv University

Chairman: Daniel Cohen-Or

Tel-Aviv University

8:30 - 9:00

Refreshments

$\boxed{1}$

9:00 - 9:30

Ranking in Graphical Databases

Hanan Samet
University of Maryland

An algorithm for ranking spatial objects according to increasing distance from a query object is introduced and analyzed. The algorithm makes use of a hierarchical spatial data structure. The intended application area is a database environment, where the spatial data structure serves as an index. The algorithm is incremental in the sense that objects are reported one by one, so that a query processor can use the algorithm in a pipelined fashion for complex queries involving proximity. It is well suited for k nearest neighbor queries, and has the property that k needs not be fixed in advance. The algorithm has been used as the basis of a browser for graphical objects in a relational database.

$\boxed{2}$

9:30 - 10:00

Reconstruction of a 3D Object from a Single Freehand Sketch

Hod Lipson
Technion

Freehand Sketching appears to be a natural communication language: it provides the means to convey qualitative information more rapidly without impeding user creativity or disrupting the flow of ideas. This research proposes and implements a new sketch-based user interface for three- dimensional conceptual design. There are several difficulties in implementing this kind of interface. The primary difficulty is that the reconstruction is mathematically indeterminate because the two-dimensional sketch lacks three-dimensional depth information. Inaccuracies inherent in the freehand sketch intensify the difficulty. This talk will present some of the algorithms used to overcome these difficulties.

$\boxed{3}$

10:00 - 10:30

The End of the Z-Buffer ?

Dan Gordon
University of Haifa

The Z-buffer is the simplest method for hidden surface removal, but it requires a large memory. By using the "critical points" polygon scan conversion technique, we can dovetail the rendering of arbitrary polygons so that only a single scanline Z-buffer (called the S-buffer) is required. The final image is produced in scanline order. Several applications of this method will be discussed.

10:30 - 11:15

Coffee Break