$\boxed{4}$

11:30–12:00

Image Operations in the Wavelet Domain*

Iddo Drori
The Hebrew University

A wide class of operations on images can be performed directly in the wavelet domain, i.e. by operating on the coefficients of the wavelet transforms of the images and/or other matrices defined by the operation. Performing such operations in the wavelet domain and then reconstructing the result is often more efficient than performing the same operation in the standard direct fashion. Perhaps more importantly, operating in the wavelet domain enables to perform these operations progressively, to operate on different resolutions, manipulate features at different scales, and to localize the operation in both the spatial and the frequency domains. In this talk we will demonstrate the applicability and the advantages of this approach to two common types of image operations: 3D image warping and convolution of images and image sequences.
*** Joint work with Dani Lischinski.**

$\boxed{5}$

12:00–12:30

Parameterization and Surface Fitting of Range Images*

Jacob Barhak
Technion

In reverse engineering, laser scanners are commonly used since they can sample 3D data fast and very accurately relative to other systems. However, a laser scanner system provides an enormous amount of digitized point data that is irregular and scattered and requires intensive processing in order to reconstruct the surface of the object. Reconstruction of freeform objects is based on two main stages: (1) parameterization and (2) surface fitting. Selection of an appropriate parameterization is essential for topology reconstruction as well as for surface fitness. Current parameterization methods have topological problems, thus leading to undesired surface fitting results such as noisy self-intersecting surfaces. This is particularly common for concave shapes where the parametric grid is self-intersecting or curved so that the resulting fitted surface significantly twists and changes its original shape. In this lecture, PDE & Neural Network (SOM) parameterization methods that produce a parametric grid without self-intersections will be described. In addition, iterative surface fitting methods, GDA & RSEC methods, were developed and implemented.
The feasibility of the parameterization and fitting algorithms will be demonstrated on several examples using sculptured free objects.
*** Joint work with Anath Fischer.**

INVITATION

ISRAEL SIGGRAPH PROFESSIONAL CHAPTER MEETING

Sponsored by

Silicon Graphics (Israel) Ltd.

February 18, 2000
8:30–12:30
Hall No. 12
Schreiber Bldg.
Tel-Aviv University

Chair: Dan Gordon
University of Haifa

This invitation is an entry permit for your car at gate 1 of the Tel-Aviv University campus.

8:30–9:00

Refreshments

$\boxed{1}$

9:00–9:30

Modeling and Rendering Escher-Like Impossible Scenes*

Guillermo Savransky
Technion

Inspired by the drawings of ”impossible” objects by artists such as M.C. Escher, we describe a mathematical theory which captures some of the underlying principles of their work. Using this theory, we show how impossible three-dimensional scenes may be modeled and rendered synthetically.
*** Joint with Craig Gotsman.**

$\boxed{2}$

9:30–10:30

Applied Computational Geometry – Progress Report

David Dobkin
Princeton University

Computational Geometry has been a thriving research area for the past 20 years. During that time, the field has grown from a handful of researchers working on a small set of problems to a full-blown research area with multiple conferences and journals and many hundreds of researchers. The initial motivation for the field was to develop algorithms that would find application in practice in other fields.
In this talk, the history of the field will be traced through a few examples of how ideas developed as theoretical insights eventually found their way into quite practical situations.

10:30–11:00

Coffee Break

$\boxed{3}$

11:00–11:30

Virtual Occluders: a From-Region Visibility Technique*

Vladlen Koltun
Tel-Aviv University

In this talk I'll introduce the notion of virtual occluders. Given a scene and a viewcell, a virtual occluder is a view-dependent (simple) convex object, which is guaranteed to be fully occluded from any given point within the viewcell and which serves as an effective occluder from the given viewcell. Virtual occluders compactly represent the aggregate occlusion for a given cell. The introduction of such view-dependent virtual occluders enables applying an effective region-to-region or cell-to-cell culling technique and efficiently computing the PVS from a cell/region. I'll present a technique that synthesizes such virtual occluders by aggregating the visibility of a set of individual occluders and I'll show their effectiveness.
*** Joint work with Yiorgos Chrystanthou and Daniel Cohen-Or.**