

INVITATION

ISRAEL SIGGRAPH PROFESSIONAL CHAPTER MEETING

July 13, 2007
8:30 – 13:00

Efi Arazi Building, Room CB07
Inter-Disciplinary, Center
Herzeliya

Chair: Zachi Karni



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Program:

- 8:30 – 9:00
Gathering & Refreshments
- 9:00 – 9:10
Welcome Notes
- 9:10 – 9:40
Context-Aware Skeletal Shape Deformation
Ofir Weber, Technion
- 9:40 – 10:10
Crowds by Example
Alon Lerner, Tel-Aviv University
- 10:10 – 10:40
Surgical Simulation Introduction and a typical challenge
Ofek Shilon, Simbionix
- 10:40 – 11:10
Coffee Break
- 11:10 – 11:50
Advanced OpenGL profiling and debugging with gDEDebugger
Yaki Tebeka, Graphic Remedy Ltd.
- 11:50 – 12:20
Online Dynamic Graph Drawing
Yaniv Frishman, Technion
- 12:20 – 12:50
Diorama Construction from a Single Image
Jackie Assa, Tel-Aviv University

Design by Kobi Kor
www.kobikor.com

Free parking available next to the campus.
Directions at: <http://www.idc.ac.il/directions>

Context-Aware Skeletal Shape Deformation

Ofir Weber - Technion

We describe a system for the animation of a skeleton-controlled articulated object that preserves the fine geometric details of the object skin and conforms to the characteristic shapes of the object specified through a set of examples. The system provides the animator with an intuitive user interface and produces compelling results even when presented with a very small set of examples. In addition it is able to generalize well by extrapolating far beyond the examples.

Joint work with Olga Sorkine, Yaron Lipman and Craig Gotsman

Crowds By Example

Alon Lerner - Tel-Aviv University

We present an example-based crowd simulation technique. Most crowd simulation techniques assume that the behavior exhibited by each person in the crowd can be defined by a restricted set of rules. This assumption limits the behavioral complexity of the simulated agents. By learning from real-world examples, our autonomous agents display complex natural behaviors that are often missing in crowd simulations. Examples are created from tracked video segments of real pedestrian crowds. During a simulation, autonomous agents search for examples that closely match the situation that they are facing. Trajectories taken by real people in similar situations are copied to the simulated agents, resulting in seemingly natural behaviors.

Joint work with Yiorgos Chrysanthou and Dani Lischinski

Surgical Simulation Introduction and a typical challenge

Ofek Shilon - Simbionix

The first 33% of the talk would be semi-popular, introducing the relatively young field of Surgical Simulation, heralded by Simbionix Ltd. Context in place, the rest of the talk would be technical, focusing on a challenge typical to RT, physically based simulation - the challenge of simulating 1D elasticity. The traditional approach to modeling bending of a thread consists in adding springs connecting non-neighboring keypoints. An alternative is introduced, starting by articulating an intrinsic bending energy of an arbitrary joint, and deducing the resultant justification forces. Significant visual appeal is thus gained, with negligible computational costs. We further investigate the bending interaction of a spline with a connected rigid body, and mention several generalization directions.

Advanced OpenGL profiling and debugging with gDEBugger

Yaki Tebeka - Graphic Remedy Ltd.

As 3D graphics hardware evolves, the tasks of profiling and debugging applications that use this highly complex and parallel hardware becomes impossibly difficult and consumes a lot of development time. In this talk, we will present advanced OpenGL profiling and debugging techniques using gDEBugger, a professional OpenGL and OpenGL ES debugger and profiler.

Online Dynamic Graph Drawing

Yaniv Frishman - Technion

This talk presents an algorithm for drawing a sequence of graphs online. The algorithm strives to maintain the global structure of the graph and thus the user's mental map, while allowing arbitrary modifications between consecutive layouts. The algorithm works online and uses various execution culling methods in order to reduce the layout time and handle large dynamic graphs. Techniques for representing graphs on the GPU allow a speedup by a factor of up to 8 compared to the CPU implementation. An application to visualization of discussion threads in Internet sites is provided.

Joint work with Ayellet Tal

Diorama Construction from a Single Image

Jackie Assa - Tel-Aviv University

Diorama artists produce a spectacular 3D effect in a confined space by generating depth illusions that are faithful to the ordering of the objects in a large real or imaginary scene. Indeed, cognitive scientists have discovered that depth perception is mostly affected by depth order and precedence among objects. Motivated by these findings, we employ ordinal cues to construct a model from a single image that similarly to Dioramas, intensifies the depth perception. We demonstrate that such models are sufficient for the creation of realistic 3D visual experiences.

The initial step of our technique extracts several relative depth cues that are well known to exist in the human visual system. Next, we integrate the resulting cues to create a coherent surface. We introduce wide slits in the surface, thus generalizing the concept of cardboard cutout layers. Lastly, the surface geometry and texture are extended alongside the slits, to allow small changes in the viewpoint which enriches the depth illusion.

Joint work with Lior Wolf