

Announcing

COS Graduate Seminar

February 17, 2006 at 2:00 pm

Southern Hall 303

at The University of Southern Mississippi

Speaker: J. Kolibal

Department of Mathematics
The University of Southern Mississippi

**Title: High Performance Surface Rendering Using
Stochastic Interpolation**

Abstract:

Surfaces displayed in 3D graphics are commonly rendered using techniques such as Bezier patches and NURBS surfaces, techniques based on fitting polynomials to data points. While these techniques provide high quality rendering reasonably fast, we propose a faster alternative which improves performance as well as rendering quality using Stochastic Interpolation.

The basic algorithm requires $O(n)$ CPU time for each output value. This is quite reasonable when n is fairly small (50 or so). Furthermore the results at a particular point are mostly dependent on nearby points. Consequently we have developed a sliding window version of the algorithm which, for a window size w , requires $O(w)$ CPU time for each output value. In practice there is usually little visual difference between surfaces rendered with the basic algorithm and the windowed algorithm with a window size of 8. Timing results comparing our technique with the NURBS functions in the OpenGL library show that the stochastic interpolation/approximation algorithm is significantly faster.

Further Information

Refreshments are served from 1:50 pm until 2:00 pm in Southern Hall 303.