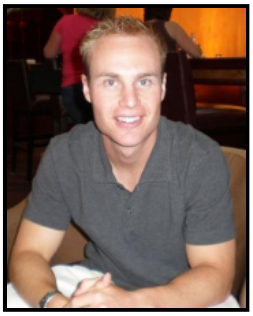

Computational Mathematics Seminar Series

An Algorithm for Surface Encoding and Reconstruction from 3D Point Cloud Data

Luke Owens, Texas A&M University

Visiting Assistant Professor, Department of Mathematics

Johnston Hall 338
April 19, 2010 - 01:00 pm

Abstract:
In this talk we will present an algorithm that fits a set of 3D data points obtained by lidar scans of some real world topology. These scans generally produce relatively sparse data sets that are not uniformly dense and contain a large amount of noise. The algorithm we have developed addresses these challenges by locally fitting these data points with various data dependent fitting schemes. The second part of our algorithm then encodes these local fit surfaces which are contained in an octree structure. Finally, a wavelet based surface reconstruction method is used to reconstruct the object represented by the point cloud data. Numerical results are presented demonstrating the quality of the surface reconstruction in the Hausdorff metric, as well as compression results for our encoding algorithm.

Speaker's Bio:
Luke Owens is from Windsor, ON, Canada. He went to Kennesaw, Georgia in August of 2000 on a golf scholarship where he later graduated with a Bachelor of Science degree in Mathematics from Kennesaw State University. In 2007, he graduated from the University of South Carolina with a Ph.D. in Mathematics under the direction of Susanne Brenner and Li-yeng Sung. Dr. Owens is currently a visiting assistant professor at Texas A&M focusing his research on numerical analysis.

Refreshments will be served.
This lecture has a reception.

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