



SEMINAR ANNOUNCEMENT

Robust Interactive Mesh Segmentation Using Fast Geodesic Curvature Flow

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Date : 4 November 2009 (Wednesday)
Time : 3.30pm – 4.30pm
Venue: SPMS-Executive Classroom 1, MAS-03-06
School of Physical and Mathematical Sciences

I will present a paper which considers the problem of interactively finding the cutting contour to extract components from a given mesh. Inspired by discretized geodesic curvature flow, we propose a geodesic curvature flow based framework to overcome all these problems. Since in many cases, the meaningful cutting contour on 3D mesh is locally shortest in the sense of some weighted curve length, the geodesic curvature flow is the ideal tool for our problem. It evolves the initial cutting contour to the nearby local minimum. We should mention that the previous numerical scheme, discretized geodesic curvature flow (dGCF), is too slow and has not been applied to mesh segmentation. With a careful observation to dGCF, we devise a fast computation scheme called fast geodesic curvature flow (FGCF), which only needs to solve a less-size and easier problem. Together with the GPU implementation, the FGCF can be solved in a fast manner. Initial cutting contour is generated by a variant of random walks algorithm, which is very fast and gives reasonable cutting result with little user input. We also provide a local editing tool for the user to locally adjust the contour when the current result is not fully satisfactory. Experiment results on the benchmark mesh segmentation data set show that our proposed framework is robust to user input and capable of producing good results reflecting user intention, geometric features and human shape perception.

Speaker Biography

Mr Juyong Zhang received his B.E. degree in Computer Science and Technology from University of Science and Technology of China (USTC), China, in 2006. He is current pursuing his PhD studies at the School of Computer Engineering in Nanyang Technological University (NTU), Singapore. His research interests include geometry processing and image processing

Host: Mathematical Imaging and Vision Research Group, Division of Mathematical Sciences, School of Physical and Mathematical Sciences

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