

Presents the Spring 2014 EECS Seminar Series

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“Example-based Real-time Skinning Animation: Algorithms and Applications”
Monday, March 24, 2014 • 10:00 a.m. • HEC 450

ABSTRACT

Skinning is the process of generating surface deformation of the character from a low-dimensional controller. This technique is the de facto way to animate various characters, especially in real time applications such as games or virtual worlds. One popular skinning technique is to automatically build skinning models from several example poses with different sets of control parameters. In this talk, I will present my latest research efforts on skinning from examples and their applications. Specifically, first, I will describe a skinning decomposition algorithm to extract the linear blend skinning (LBS) model with a low number of unorganized rigid bone transformations and a sparse, convex bone-vertex weight map. Second, I will present a skeletal-based LBS rigging to reconstruct bone transformations with skeleton structure, joint positions, and skinning weights. Third, I will introduce an efficient two-layer sparse compression technique to substantially reduce the computational cost of a dense-weight skinning model with insignificant loss of its visual quality. These three introduced techniques can be potentially used for many graphics and animation applications including animation editing, skeleton extraction, hardware-accelerated rendering, data compression, and collision detection. Finally, I will conclude this talk by describing my future research directions and plans.

BIOGRAPHY

Binh Le is a PhD candidate at the Department of Computer Science at the University of Houston (expected to graduate in Spring 2014), and the Associate Director of the Computer Graphics and Interactive Media Lab at the University of Houston. He received B.S. in Computer Science at the Vietnam National University in 2007. His research interests include computer graphics, computer animation, virtual human modeling and animation, and computer vision. He is the recipient of the UH Friends of NSM Fellowship (2013) and the UH CS Best PhD Student Award (2012). He is also the local arrangement co-chair of the 27th International Conference on Computer Animation and Social Agents (CASA) 2014. More information can be found at <http://graphics.cs.uh.edu/ble>.