

CISTalks

Time: 2023-11-29T14:00

Zoom Meeting:

<https://tamu.zoom.us/j/96837857509?pwd=T3FDK09KUDhRVUhlURNQW9pWjdRUT09>

Meeting ID: 968 3785 7509

Passcode: 694193

Open to the public. All are invited.

Hyper-Realistic Rendering: Leveraging Representational Art Approaches for Effective Control of Visual Results

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Abstract

My primary goal in this fringe direction of research is to develop a simple, intuitive formal framework for the automatic representation of simplified shapes and materials that can support Hyper-Realism in a wide variety of rendering applications. I observe that with the emphasis on the physical laws in rendering systems, (1) the focus increasingly shifts away from how users perceive the virtual environment, (2) rendering becomes prohibitively difficult to realize desired global illumination effects in real-time, and (3) the true inclusion of human-in-the-loop to control visual results also becomes significantly hard. I have identified two broad categories of artistic and mathematical approaches that can facilitate effective Hyper-Realistic rendering with clear control of visual results: (1) Geometry Representation with Anamorphic Bas-Reliefs and (2) Material Representation with Barycentric Shaders. A significant advantage of these two approaches is that they simplify the reconstruction processes by allowing some of the real-world parameters to be embedded into the representations. In this talk, I will give a wide variety of examples that demonstrate the effectiveness of this approach.



Biography

Ergun Akleman is a Professor in the Visual Computing and Interactive Media Section of School of Performance, Visualization, and Fine Arts. He is also a joint Professor in Computer Science and Engineering. Akleman has been at Texas A&M University for 28 years. He received his Ph.D. degree in Electrical and Computer Engineering from the Georgia Institute of Technology in 1992. Akleman is teaching, research and creative activities are all transdisciplinary. He had approximately 200 publications in a wide variety of disciplines from computer graphics, computer-aided design, and mathematics to art, architecture, and social sciences. His most significant and influential contributions as a researcher have been in shape modeling and computer aided sculpting. He is also a professional cartoonist who published more than 500 cartoons. He has a bi-monthly corner called Computing through Time in the Flagship magazine of IEEE Computer Society, IEEE Computer. He also published weekly cartoons in “Herkes Bilim ve Teknoloji” a popular science and technology magazine in Turkey.