

On-The-Fly Appearance Quantization on the GPU for 3D Broadcasting

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IPARLA project (INRIA Futurs - LaBRI)

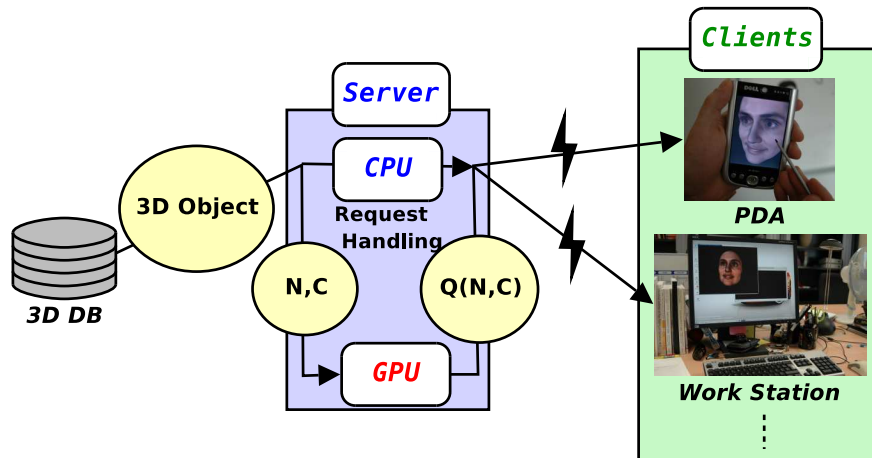


Figure 1: A client/server 3D broadcasting application, with on-demand quantization to reduce bandwidth. The on-demand quantization workload is delayed to the GPU on the server side.

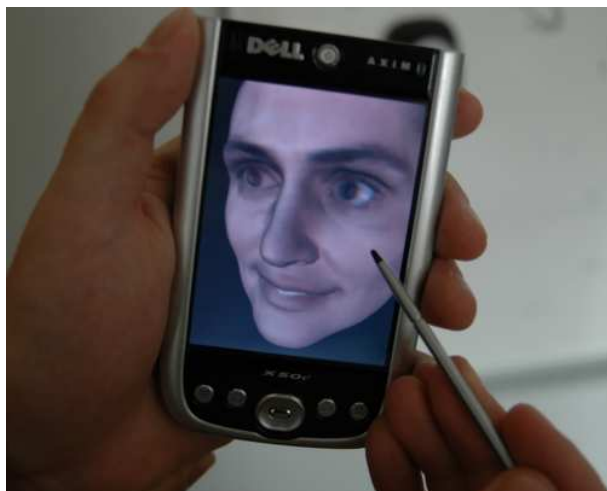
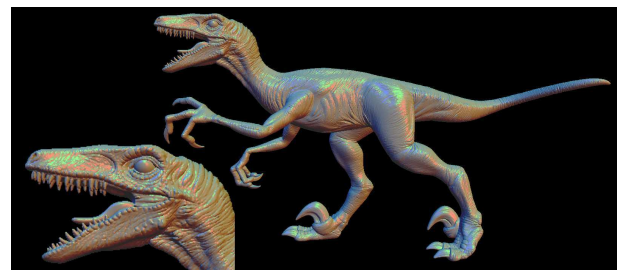


Figure 2: The power of recent mobile terminals makes them appealing as potential clients for 3D broadcasting. On this figure, interactive dequantization and rendering are achieved on a PDA with OpenGL ES capacity.



Original model - 288 bits/vertex
96 bits for position, normal and color



Quantized normals and colors on GPU - 128 bits/vertex
96 bits for position and 32 bits for normal and color

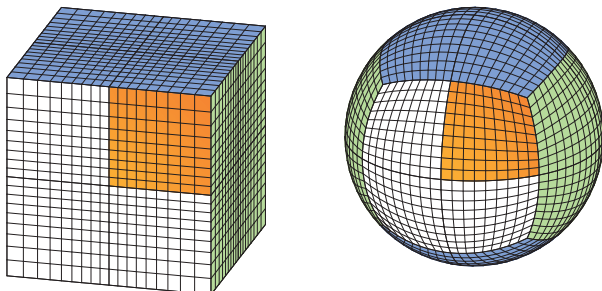
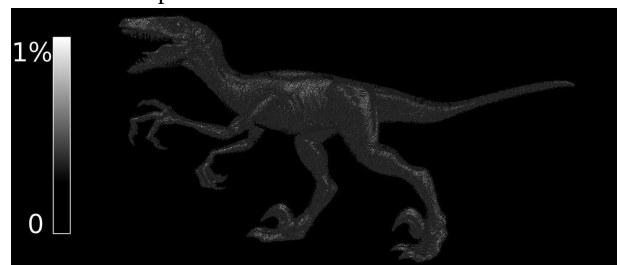


Figure 3: Original warping lines on the unit cube (left) and their projection to the unit sphere (right), the orange zone corresponds to the only required part of the sphere to be represented in the look-up table due to symmetry reasons



Color error - Difference image x 100

Figure 7: Quantization error in Phong shading. Three light sources, specular surface.