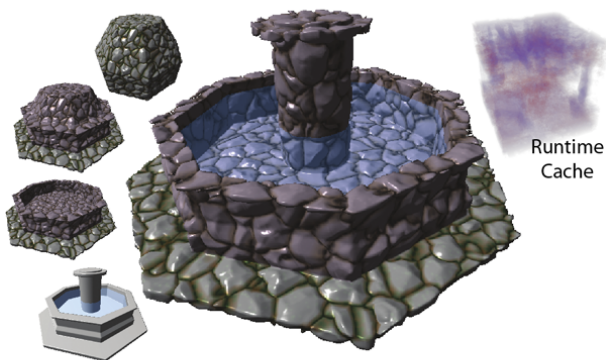


A Runtime Cache for Interactive Procedural Modeling

Tim Reiner; Sylvain Lefebvre; Lorenz Diener; Garcia Fernandez, Ismael; Bruno Jobard; Carsten Dachsbacher



We present an efficient runtime cache to accelerate the display of procedurally displaced and textured implicit surfaces, exploiting spatio-temporal coherence between consecutive frames. We cache evaluations of implicit textures covering a conceptually infinite space. Rotating objects, zooming onto surfaces, and locally deforming shapes now requires minor cache updates per frame and benefits from mostly cached values, avoiding expensive re-evaluations. A novel parallel hashing scheme supports arbitrarily large data records and allows for an automated deletion policy: new information may evict information

no longer required from the cache, resulting in an efficient usage. This sets our solution apart from previous caching techniques, which do not dynamically adapt to view changes and interactive shape modifications. We provide a thorough analysis on cache behavior for different procedural noise functions to displace implicit base shapes, during typical modeling operations.