Advanced Modeling Techniques

CSC 292:
Computer Graphics

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Problems

How to efficiently create models for complex objects or phenomena.

- Clouds, Fog
- Bridges, Buildings
- Fire, Water
- Mountains, Trees, Forests
- Animals, People

Sometimes science, Sometimes art, Blurred boundaries.

Grab-bag of Methods

- Hierarchical splines
- Noise-based textures (marble, stucco, woodgrain)
- Procedural models
- Fractals (terrain, clouds)
- Grammar-based models (plants, trees, shells)
- Particle systems (fire, fireworks, smoke, grass, trees)
- Volume rendering (tomographic data, 3D fields)
- Automated placement (Forests, rivets, rivers)

Physically-based modeling

- Contraints
- Cloth, flexible surfaces
- Solids
- Terrain
- Interaction of rigid objects
- Articulated models
- Energy minimization techniques

Special topics

- Terrain
- Clouds
- Waves
- Turbulence
- Blobs
- Animals
- People