



RENDERING & ANIMATION

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MOTIVATION


- Geographic Information Systems (GIS) like Google Earth and Bhuvan (Terrain rendering) .
- Vision problems like flight simulators.
- Gaming Industry (inclination towards GPU).
- Animation Industry.
- Graphical simulation of various other problems existing in the world of physics.
- Medical applications.

Terrain...??

Terrain is land: rocky mountains, grassy plains, rolling hills, all combining to form a beautiful landscape.

Terrain Rendering field is concerned with how to render all the above mentioned magnificent natural features in real-time.

Terrain visualization and rendering is an important field of study for several reasons.



To truly make terrain rendering a useful tool for a multitude of applications, it must be detailed enough and fast enough to achieve a smooth frame rate.

Flight Simulators - Flight simulation is an artificial re-creation of aircraft flight and various aspects of the flight environment.

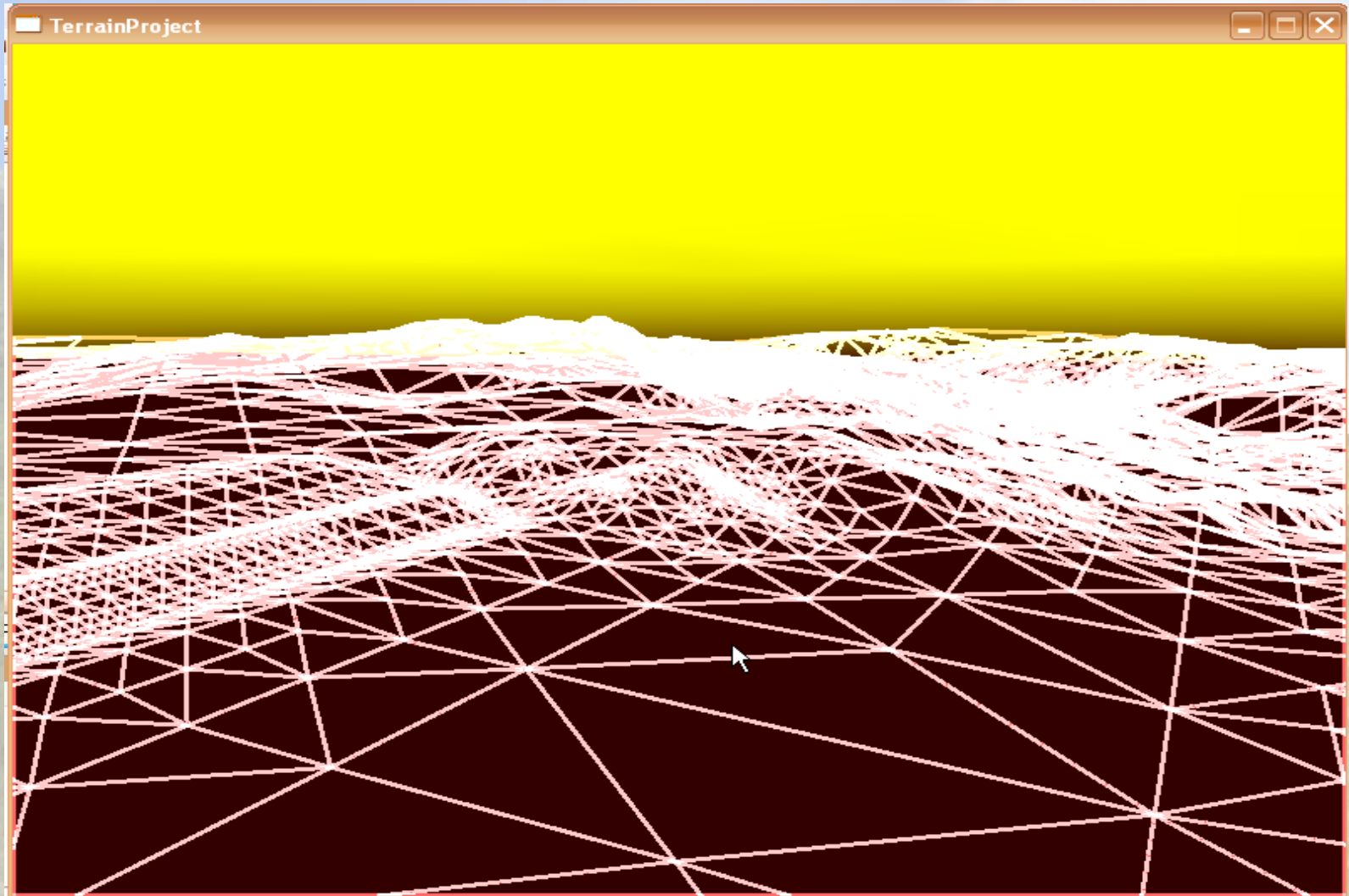
Terrain Rendering

2D results



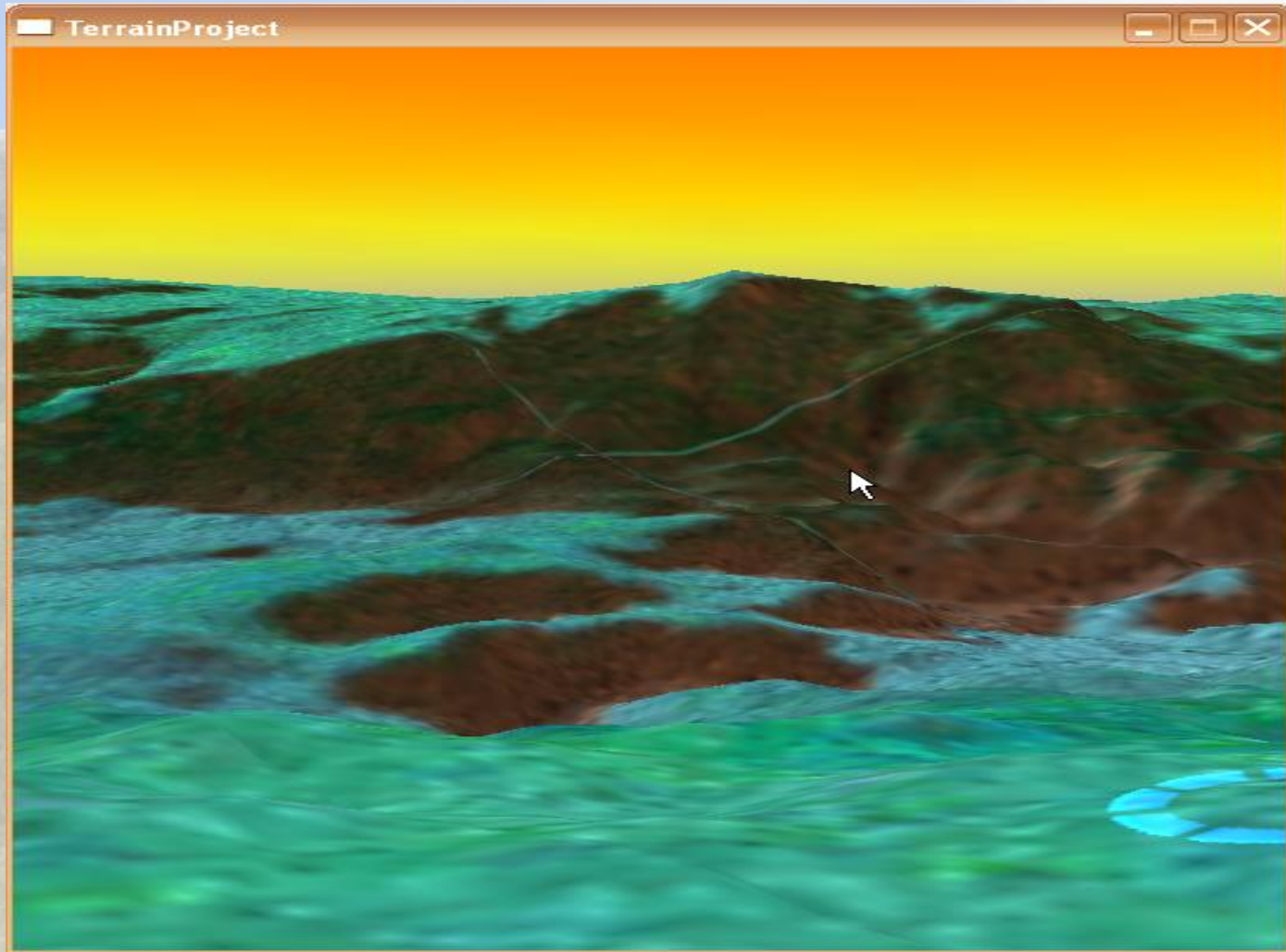
Terrain Rendering

3D mesh results



Terrain Rendering

3D textured results



Terrain Rendering

Real-time Rendering and Manipulation of Large Terrains

Authors: Shiben Bhattacharjee, Suryakanth Patidar, P J Narayanan

Real-time Rendering and Manipulation of Large Terrains

vis-1236

Virtual Globe- Geographic Information Systems (GIS)

Google Earth and Bhuvan.



Gaming Industry- Computer games have featured terrain since the earliest 3D graphics. However, representing the real world has not been a priority; they are usually "fantasy" worlds. Even when the real world is the subject, an extremely limited area or view of the world is used, with no geographic framework.



Game Engine Video Clip



Flight Simulators



Google Earth flight Simulators



Animation

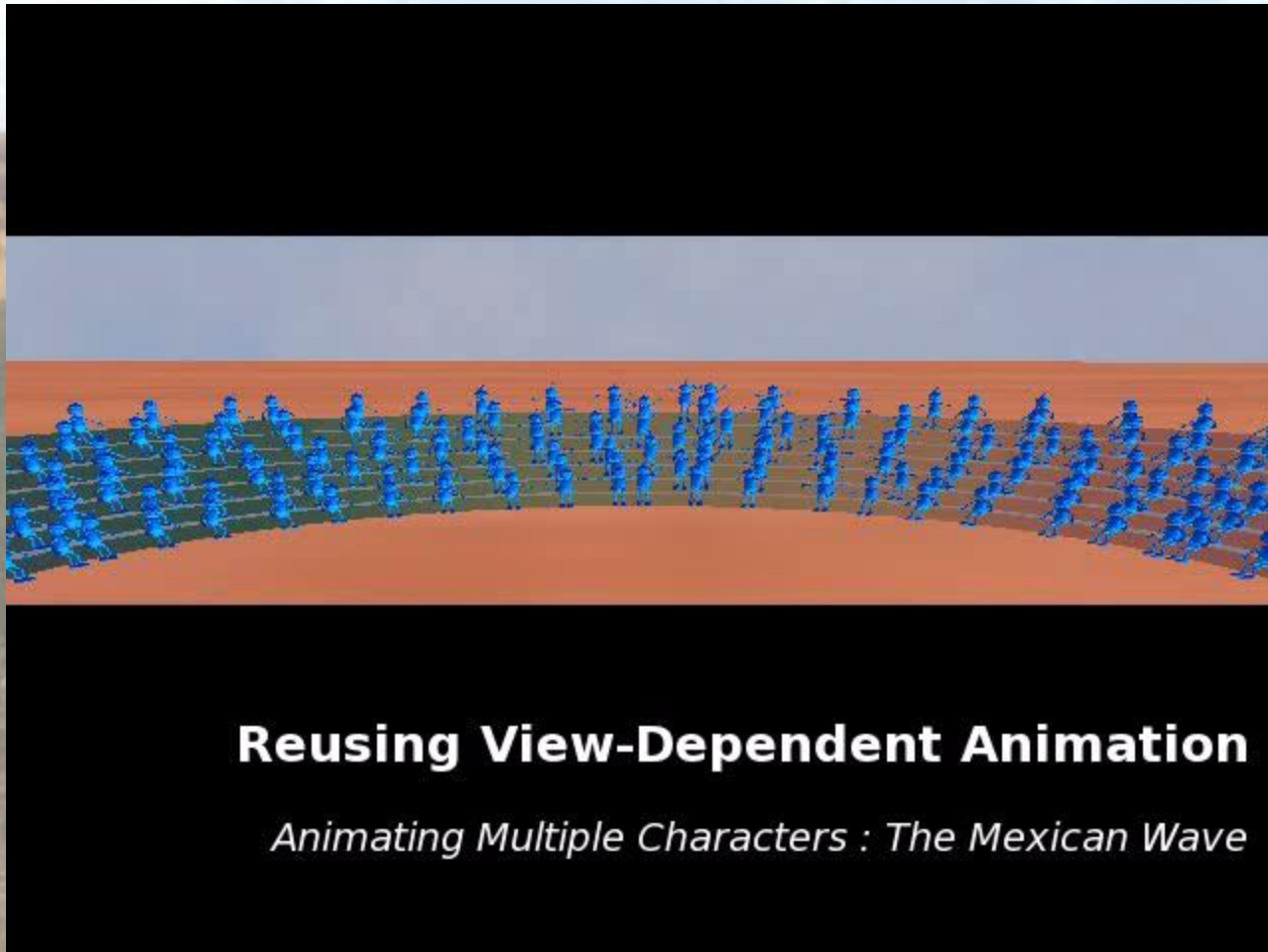
(Results by Parag Choudari)



Reusing View-Dependent Animation

Different cameras, Same character

Animation



72.13 FPS
Depth: 7, Nodes: 512, Triangles: 8276
Split Factor {+/-}: 12.00

Animation



Reusing View-Dependent Animation

Different cameras, Same character

Animation

Clip Number : 4

Title: Ballet of the Hand



System Capabilites Demonstrated :

Complex animation with multiple
view-dependent sequences interspersed with
normal animation sequences,
Affine camera recovery,
Complex skeletal pose recovery from sketches.

72.13 FPS
Depth: 7, Nodes: 512, Triangles: 8276
Split Factor {+/-}: 12.00

Animation



Hugo's High Jump

72.13 FPS
Depth: 7, Nodes: 512, Triangles: 8276
Split Factor (+/-): 12.00

Medical Application

Simulation of Synus surgery

