Drone WebGL Demo

Davide Bergamaschi 2020

Drone that flies around in a 3D landscape

- Drone that flies around in a 3D landscape
- Third-person point of view

- Drone that flies around in a 3D landscape
- Third-person point of view
- Drone cannot fly underneath the terrain

- Drone that flies around in a 3D landscape
- Third-person point of view
- Drone cannot fly underneath the terrain
- Shading computation done in World-Space coordinates

■ Scan-line rendering + Phong shading (World Space)

- Scan-line rendering + Phong shading (World Space)
 - Main direct light source + ambient component

- Scan-line rendering + Phong shading (World Space)
 - Main direct light source + ambient component
 - Lambert diffuse + Phong specular BRDF

- Scan-line rendering + Phong shading (World Space)
 - Main direct light source + ambient component
 - Lambert diffuse + Phong specular BRDF
- Third-person "Look-At" view, with camera following drone

- Scan-line rendering + Phong shading (World Space)
 - Main direct light source + ambient component
 - Lambert diffuse + Phong specular BRDF
- Third-person "Look-At" view, with camera following drone
- User interaction through basic flight control

• Custom artist-made drone model and terrain textures

- Custom artist-made drone model and terrain textures
- Procedural morphology generated on the fly

- Custom artist-made drone model and terrain textures
- Procedural morphology generated on the fly
 - Planar grid of vertices "disturbed" with 2D simplex GPU noise

- Custom artist-made drone model and terrain textures
- Procedural morphology generated on the fly
 - Planar grid of vertices "disturbed" with 2D simplex GPU noise
 - Vertical displacement computed una tantum with vertex shader

- Custom artist-made drone model and terrain textures
- Procedural morphology generated on the fly
 - Planar grid of vertices "disturbed" with 2D simplex GPU noise
 - Vertical displacement computed una tantum with vertex shader
 - Normals and tangents obtained from analytical derivatives

- Custom artist-made drone model and terrain textures
- Procedural morphology generated on the fly
 - Planar grid of vertices "disturbed" with 2D simplex GPU noise
 - Vertical displacement computed una tantum with vertex shader
 - Normals and tangents obtained from analytical derivatives
 - All data is saved to GPU buffers through Transform Feedback

- Custom artist-made drone model and terrain textures
- Procedural morphology generated on the fly
 - Planar grid of vertices "disturbed" with 2D simplex GPU noise
 - Vertical displacement computed una tantum with vertex shader
 - Normals and tangents obtained from analytical derivatives
 - All data is saved to GPU buffers through Transform Feedback
- Terrain bump mapping using texture data

Invisible walls

- Invisible walls
 - Prevent intersection with terrain

- Invisible walls
 - Prevent intersection with terrain
 - Delimit simulation area

- Invisible walls
 - Prevent intersection with terrain
 - Delimit simulation area
- Independently animated propellers

- Invisible walls
 - Prevent intersection with terrain
 - Delimit simulation area

- Independently animated propellers
 - Motion blur effect baked in static texture

- Invisible walls
 - Prevent intersection with terrain
 - Delimit simulation area

- Independently animated propellers
 - Motion blur effect baked in static texture
 - Rotation at constant speed

- Invisible walls
 - Prevent intersection with terrain
 - Delimit simulation area

- Independently animated propellers
 - Motion blur effect baked in static texture
 - Rotation at constant speed
- Exponential distance fog