Drone WebGL Demo

Davide Bergamaschi

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Project specification

- 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

Implementation features

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

Implementation features

- 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

Implementation features

- 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