

# **lunar lander game**

The player controls lander rotation and thrusters in order to safely land on the surface.

The player can land on marked areas to earn extra points and fuel.

The game goes on until no fuel is remaining.

The lander is spawned randomly, with a random horizontal speed forcing the player to use some more fuel before attempting to land.

The terrain is defined through an array of points. Between each pair of points, a quad is positioned, rotated and scaled to connect the two points.

Once the altitude drops below a certain threshold, the camera zooms in and follows the center point between the lander and terrain directly below. It makes the game less static and helps with landing

The shape of the lander is approximated with 3 circles which makes collision detection easier due to rotation.

Each circle is checked against every line segment defined by the terrain (basic circle-line intersection).

Upon collision, the landing is safe if 4 conditions are met:

velocity magnitude must not be too high

rotation angle must not be too high

landing terrain must have a slope of 0

both landing legs must be grounded

One particle system is attached to the thruster and it emits particles in a cone.

The other one creates a circular explosion when the player crashes.