1. Basic movie effects

- Composed model: the character Animal in the Chase Scene is the composed model made of a Polandball (sphere) as a head and Parallelepipeds as legs and body. In the movement of Animal, it can be seen how the legs move separately and the body and head slightly jump up and down. If the animal is moved, all its parts are moved.
- Materials: A specular property is available on the head of Animal, which is different from the properties of the rest of the objects.
- Texturing: Polandballs are created by applying a texture to a sphere. They can be seen in all three scenes. Textures are also applied to create Animal.
- Illumination: The fire is a light source in the first scene and it is moving. The sun is the light source in the second scene and the spotlight is the light source in the third scene.
- Shader: Phong Shading is implemented and can be seen everywhere, it is used every time we apply a texture, for instance.
- Transparency: In the third scene, we have a window through which the Alien can be seen.
- Camera: The animated camera flight shows an overview at first and then goes from left to right to every scene. When in free camera mode, the animations are started only when close to a scene.

2. Special effects

Our special effect is a particle system – fire. Every particle is generated according to a normal distribution on the x and z axes, in order to simulate the flames. As time passes, they "rise up" and start to fade away. When they are young, and at the base of the fire they are yellow, but as they ascent and get older they switch to orange.

Each particle acts as a billboard such that the fire appears realistic from all viewing angles. This is done by leveraging the camera's up and right vectors, which are used to compute the final location of the particle.

The first implementation rendered the particle with GL_QUADS, but that turned out to be quite slow. After some online reading, we switched to using GL_TRIANGLE_STRIP which turned out to speed up the animation quite a bit.

Initially we were supposed to add a bloom effect as well, but we did not manage to do that. It should be implemented with a post-processing shader. Framebuffer objects should be used and a Gaussian filter for blurring.