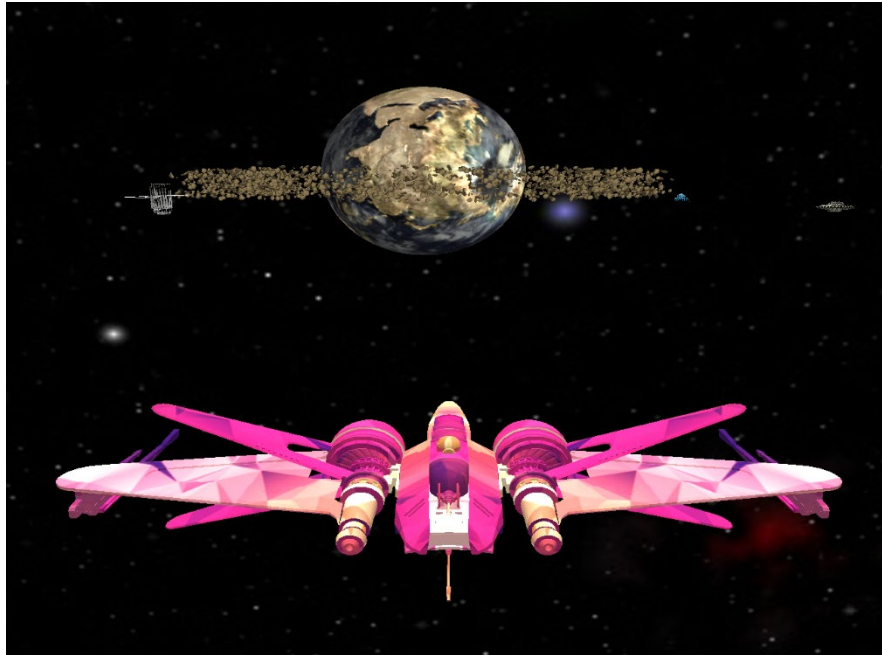


CSCI 3260 Project Report

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Part 1: Overall Scenes:

In this project, we develop a scene that contains a spacecraft, a planet, a space vehicle, asteroid ring cloud and additional UFO and space station. We add a direct light and a point light.

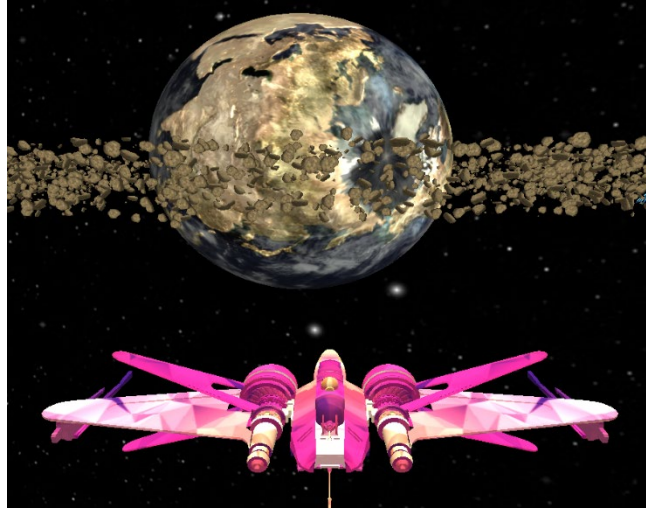


For texture, we have normal mapping along with 4 different textures on the planet and mix them up, which shows a realistic planet effect; we add texture change on the space vehicle so that it can react when our spacecraft becomes too near to it.

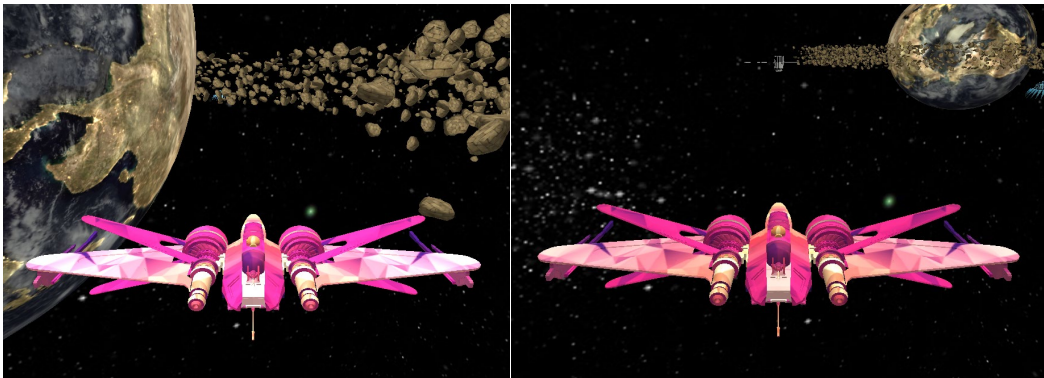
For the sky, we make a cube skybox that provides a surrounding space and interesting light effect. We can have our view fixed on to the tail of the space craft and move along with it.

Part2: Close look at rendering result:

1. Rendering on planet: normal mapping combining 4 different textures.



2. Rendering on spacecraft: reflection under different light source.



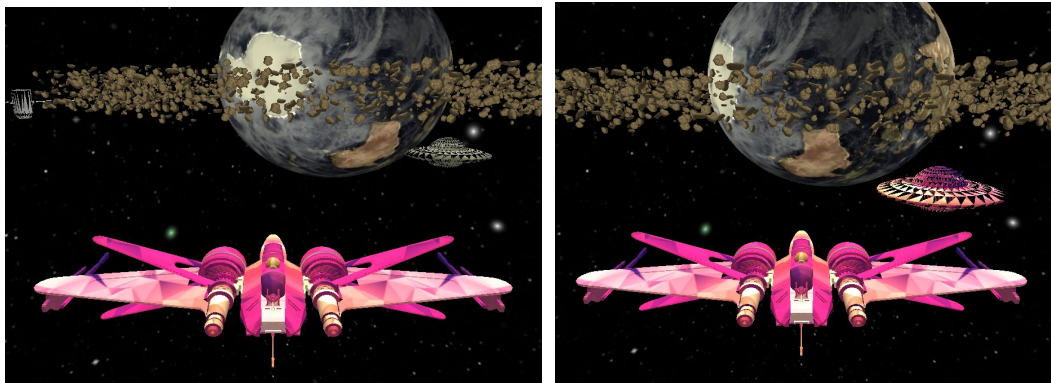
3. Rendering on space vehicle: changing in texture when collision detected.



4. Rendering on an asteroid ring cloud and on space station (additional meaningful object)

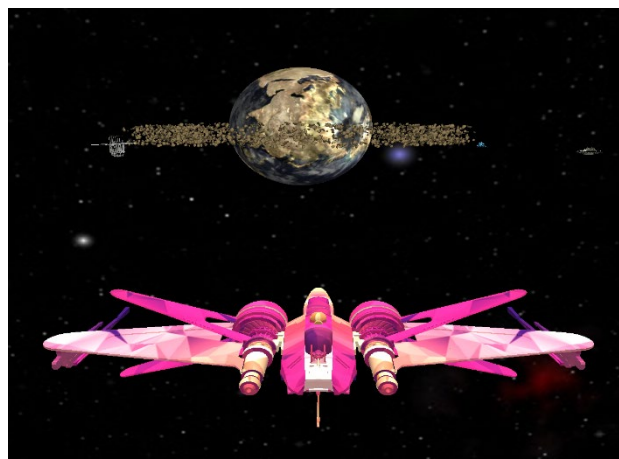


5. Rendering on UFO (additional meaningful object)

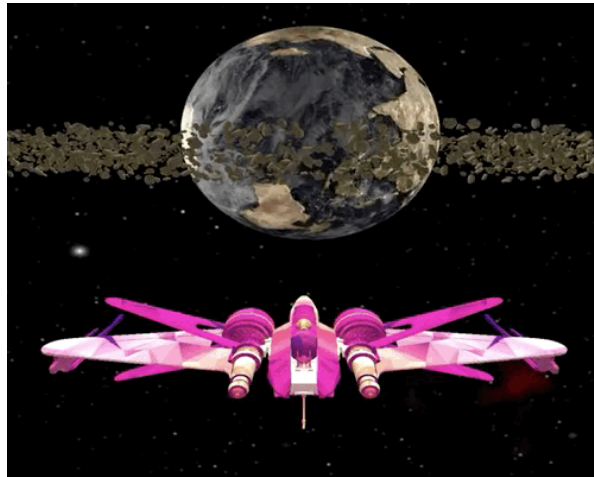


Part3: Fulfillment on requirements:

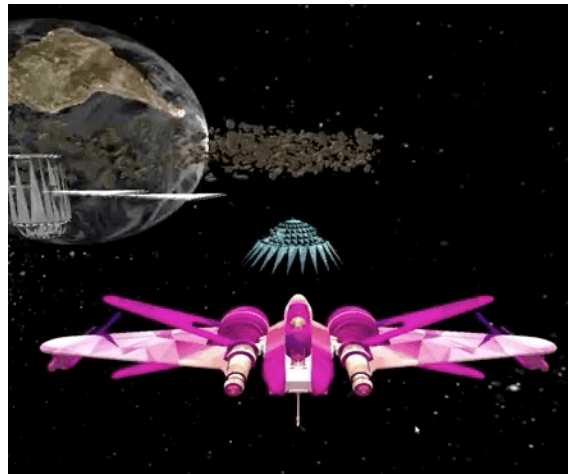
1. Basic parts:
 - 1) Render one planet, one spacecraft, one space vehicle, a skybox, an asteroid ring cloud along with the correct viewpoint.



- 2) Normal mapping and Self-rotation for the planet and the rotation of the rocks. (GIFS)

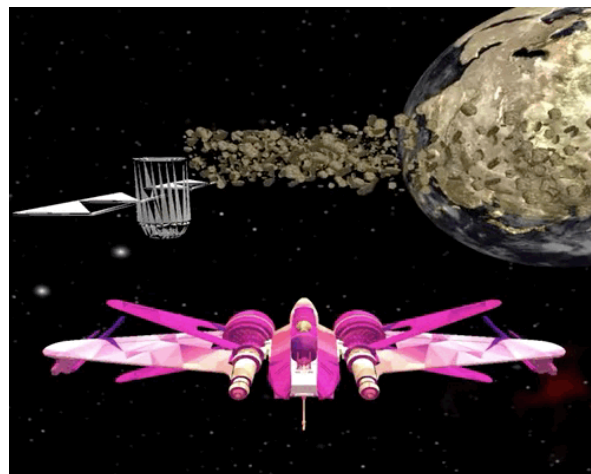


- 3) Self-rotation for local space vehicle. (GIFS)



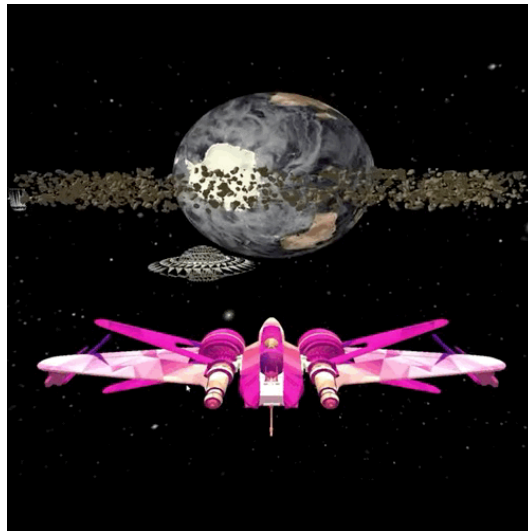
- 4) Use mouse to control the self-rotation of the spacecraft and use keyboard to control the translations of the spacecraft.

Users can move mouse cursor horizontally while pressing the left button to view left or right, by rotating the spacecraft and the camera at the same time; Key “Q” and “E” can achieve the same feature; “UP”, “Down”, “Left” and “Right” can be pressed to control the translation of the spacecraft.



2. Bonus features:

- 1) Add space station and a UFO with self-rotation. (GIFS)



- 2) Add a point light source.

- 3) Achieve collision detection on the UFO and local space vehicle. (GIFS)



- 4) Achieve acceleration effect on space craft: use "Shift" to change the amount of the acceleration. (GIFS)

