



# Assignment 3

Grunnleggende Visuell Databehandling

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# 1 Task 1: More polygons than you can shake a stick at

## 1.1 a)

I just created a VAO object called terrain. Adjusting the camera x,y,z, pitch and fovy, I moved around to get this as a result:



Figure 1: Terrain

## 1.2 c)

After adding normals as a vertex array object, and passing them as colour, we get Figure 2 as a result.

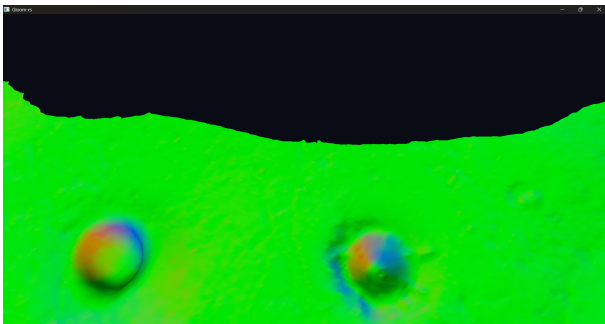


Figure 2: Terrain colour

### 1.3 d)

Following the steps stated in question 1d) one can get this lunar surface.

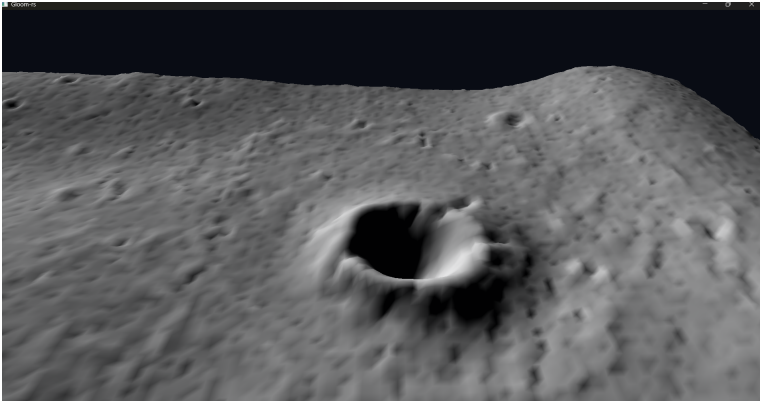


Figure 3: Lunar surface - lighting

## 2 Task 2 Helicopter Parenting

### 2.1 c)



Figure 4: Helicopter

### 3 Task 3: The (Model) Matrix: Revolutions

#### 3.1 c)



Figure 5: Verifying rotation and position change

I combined the node's model matrix with the scene's View-Projection matrix to create the complete MVP (Model-View-Projection) matrix. In figure 5, I rotated the helicopter body by 30 degrees, and in the plane you can see the rotation, verifying that it works.

## 5 Task 5 : Help! My lighting is wrong!

### 5.1 a)

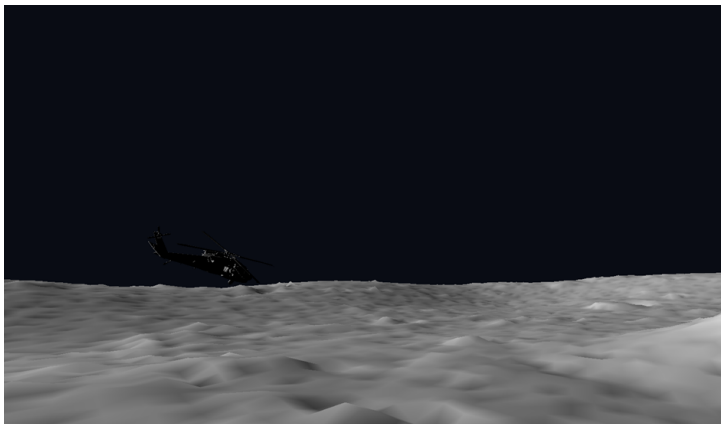


Figure 6: The dark side of the helicopter





Figure 7: The bright side of the helicopter

## 5.2 c)

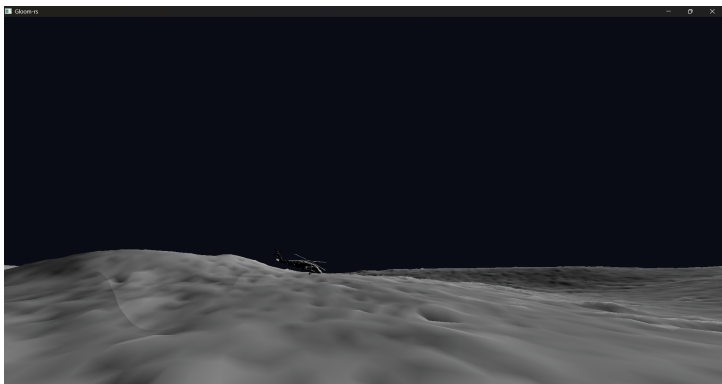


Figure 8: The dark side of the helicopter 1

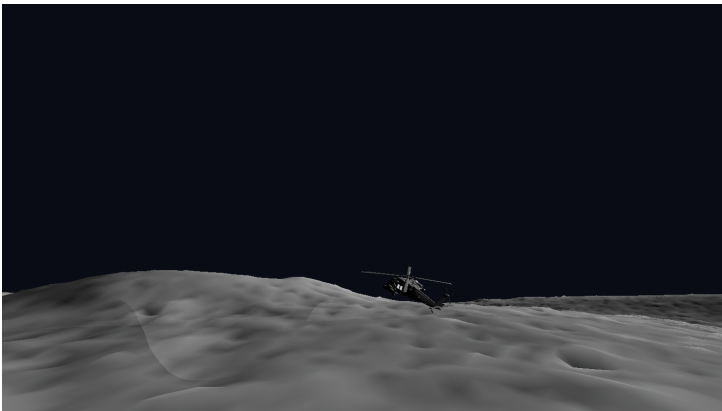


Figure 9: The dark side of the helicopter 2

## 6 Task 6 : Time to turn this thing up to 5

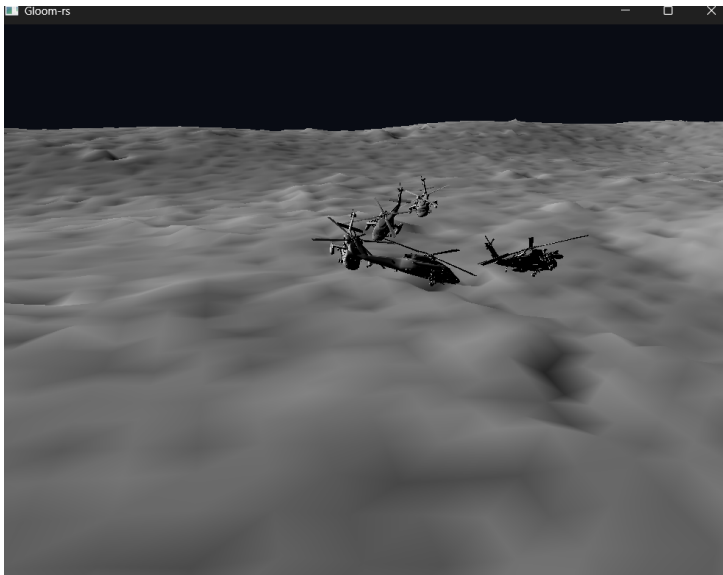


Figure 10: Five helicopters, man. Five !