

3D models, Lights & Shadows



What is our GOAL for this MODULE?

The goal of this module is to learn about 3D models and how to use them in A-Frame, while adding different types of light and casting shadows.

What did we ACHIEVE in the class TODAY?

- We added and loaded 3D glTF models in the scene.
- Added different types of light in the scene and cast shadows of the object
- Animated lights.

Which CONCEPTS/CODING BLOCKS did we cover today?

- Usage glTF 3D models in A-Frame
- <a-assets> and <a-entity> tags with various attributes
- Animation of lights

How did we DO the activities?

1. Downloaded the assets and added in <a-assets> tag.

```
<body>
  <a-scene background="color:white">

    <a-camera position="0 8 15"></a-camera>

    <!-------Asset Management----->
    <a-assets timeout="10000">

      <a-asset-item id="tiger" src="./models/tiger/Mesh_BengalTiger.glTF"></a-asset-item>

      <a-asset-item id="giraffe" src="./models/giraffe/scene.glTF"></a-asset-item>

      <a-asset-item id="fence" src="./models/wooden_fence/scene.glTF"></a-asset-item>

      <a-asset-item id="tree" src="./models/tree_for_games/scene.glTF"></a-asset-item>

      <a-asset-item id="photographer" src="./models/photographer/scene.glTF"></a-asset-item>

      

    </a-assets>

    <a-sky src="#bg"></a-sky>
```

2. We created an <a-entity> with the same gltf-model attribute.

```
<!--Giraffe-->
<a-entity>
  <a-entity position="-9 4 8.2" rotation="0 0 0" scale="1 1 1" gltf-model="#giraffe"
    shadow="cast: true; receive: false">
  </a-entity>
</a-entity>

<!--Photographer-->
<a-entity>
  <a-entity position="20 0 0" rotation="0 -90 0" scale="1 1 1" gltf-model="#photographer"
    shadow="cast: true; receive: false">
  </a-entity>
</a-entity>

<!--Trees-->

<a-entity position="-10 0 -1" rotation="0 0 0" scale="0.009 0.009 0.009" gltf-model="#tree"
  shadow="cast: true; receive: false">
</a-entity>

<a-entity position="10 0 -1" rotation="0 0 0" scale="0.009 0.009 0.009" gltf-model="#tree"
  shadow="cast: true; receive: false">
</a-entity>

<!--Fence-->
<a-entity>
  <a-entity position="-2 -0.9 -10" rotation="0 0 0" scale="0.005 0.005 0.005" gltf-model="#fence"
    shadow="cast: true; receive: false">
  </a-entity>
```

3. We added the values for position, rotation and scale attributes to set the model orientation.

```

<!--GLTF Models-->

<!--Tiger-->
<a-entity >
  <a-entity position="-5 2 0" rotation="0 55 0" scale="0.05 0.05 0.05" gltf-model="#tiger">
  </a-entity>
</a-entity>

```

4. We added the ambient and directional lights to our scene and cast shadows

```

<!--Lights in the scene-->

<!--Ambient-->
<a-entity light="type: ambient; intensity: 0.5;">
</a-entity>

<!--Directional-->
<a-entity animation="property: rotation; to: 0 360 0; easing: linear; loop: true; dur: 60000">
  <a-entity light="type: directional; castShadow: true; intensity: 1; distance: 50; decay: 2; color: yellow"
    position="-100 18 20"></a-entity>
</a-entity>

<!--Circular Plane-->

<a-circle position="-0.4 -0.76 -25" rotation="-90 0 0" radius="100" shadow="receive: true" visible="true"
  color="#2E6F10">
</a-circle>

<!--GLTF Models-->

<!--Tiger-->
<a-entity>
  <a-entity position="-5 2 0" rotation="0 55 0" scale="0.05 0.05 0.05" gltf-model="#tiger" shadow="cast: true;">
  </a-entity>
</a-entity>

```



We successfully created a 3D jungle scene.

What's NEXT?

In the next class, we will be learning more about real world simulation using A-Frame.

EXTEND YOUR KNOWLEDGE:

You can refer to the below link for the documentation of three.js and more examples

<https://aframe.io/docs/1.0.0/introduction/>