

# ANATOMY PROJECT

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# PROJECT IDEA

3D Anatomic learning application.

explore all the human body parts in a very detailed level.



# ENVIRONMENT

- ❖ HTC Vive – Setup Vive SDK and Unity
- ❖ Unity 5, C# scripts
- ❖ Visual studio 2015
- ❖ Mono develop



Steam® VR



Visual Studio®



MonoDevelop



# FEATURES

- SIMPLIFICATION
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# SIMPLIFICATION

Our human body parts consist of 934 object models. Every model have many vertices, for example the following model have 720,000 polygons in it.

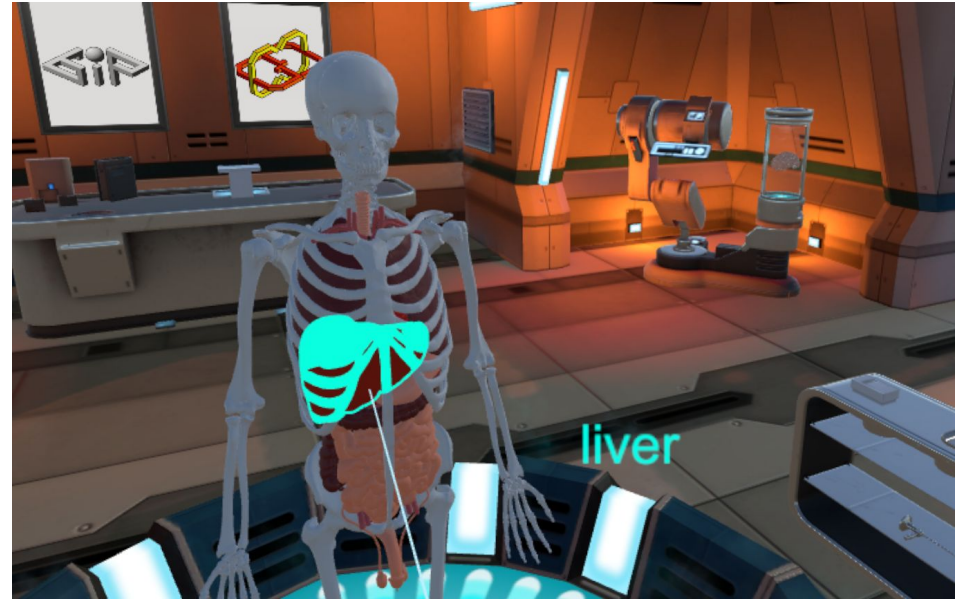
Due to the amount of resource that HTC Vive is consuming. we had to provide a solution to the FPS Problem.

Therefore we run a simplification algorithm to reduce the amount of polygons on each model



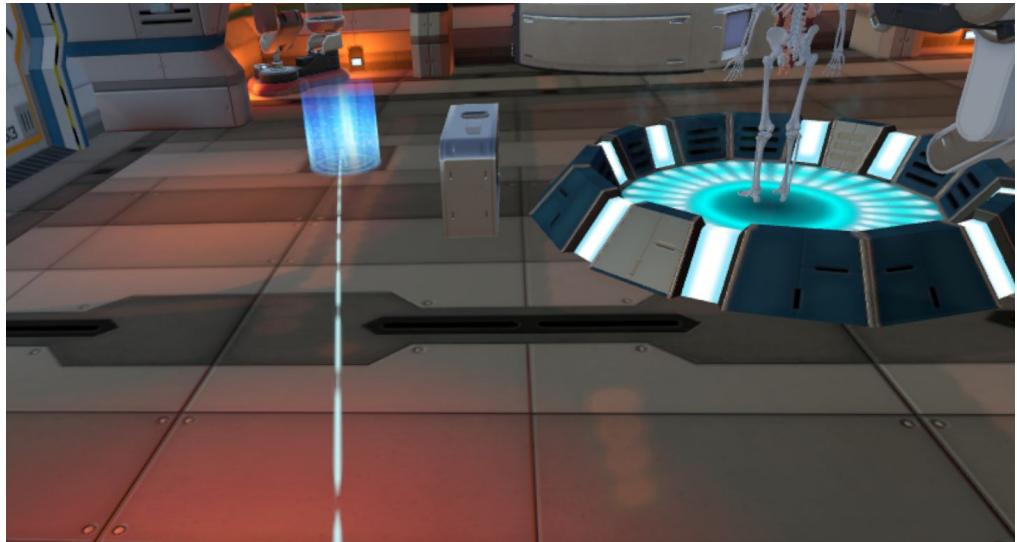
# RAY CAST

- ❖ Find closest object by shooting a ray on the body and checking if this object is part of the human body.
- ❖ Provide the relevant name on runtime object interaction.



# TELEPORTER

- ❖ Provides to the user an ability to move freely in the room without walking in the real world.
- ❖ The teleporter is consist of Bezier Pointer.





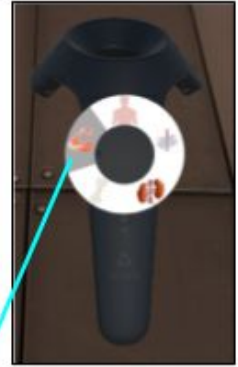
# CLIPPING PLANE

- ❖ Clip regions are commonly specified to improve render performance.
- ❖ Save time and energy by skipping calculations related to pixels that the user cannot see. (Pixels that will not be drawn are outside the clip region).
- ❖ We wrote shader to create a clipping effect. In our scene we have a plane that interact on collision with the controllers.



# RADIAL TOUCHPAD MENU

- ❖ Menu to each controller
- ❖ In each interaction with the touchpad, a menu appears and highlight the position of user's finger on the menu.

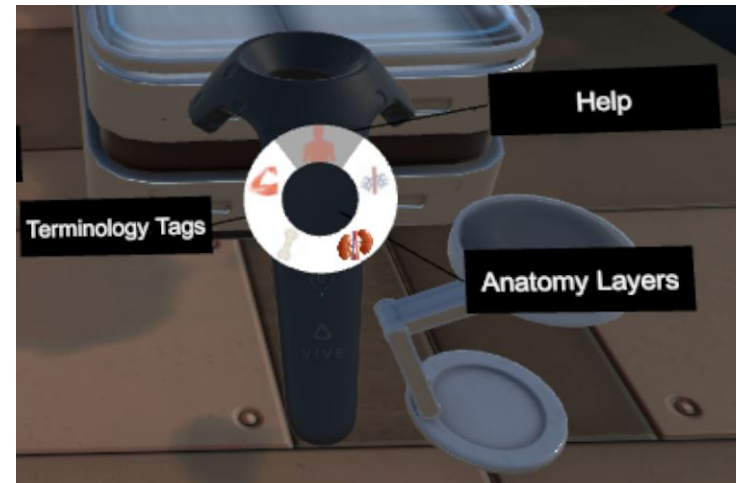


# PANEL 1

## ❖ **Body Layers**

Navigate between 8 different layers:  
skin, muscles(3 levels), bones,  
internal organs(2 levels), vessels.

- ❖ provide easier way to reach with the Ray Cast even the most hidden parts of the body.



# PANEL 2

- ❖ Reset button - restore user original position by set the transform `Vector3(x,y,z)` coordinates.
- ❖ Clipping Board  
set Clipping mode to ON and set to active the clipping plane.



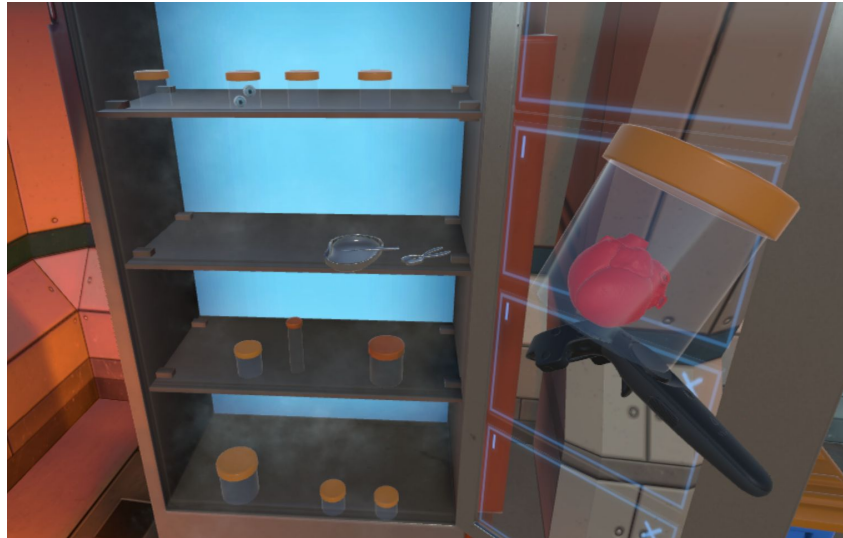
# HELP BUTTON

- ❖ Show labels for each button with information about it's usage.

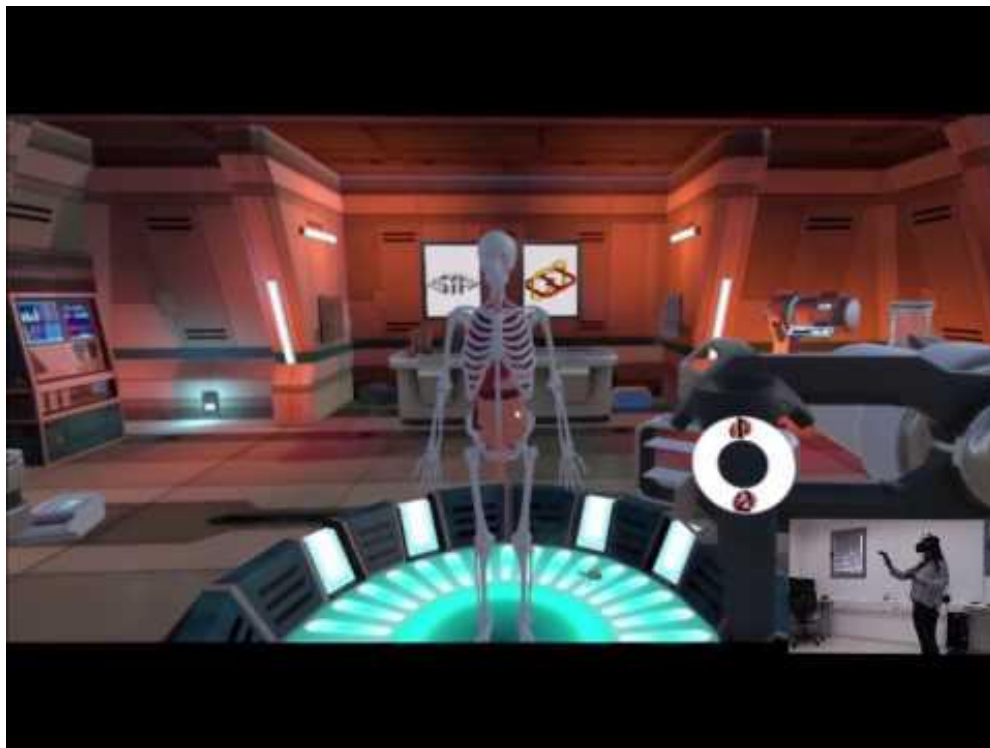


# INTERACTIVE LABORATORY ENVIRONMENT

- ❖ Realistic atmosphere - The Human body is located in the laboratory room.
- ❖ The room have many different object that you can grab, throw(have physics).
- ❖ Walk around and have a look on separate body parts.



# FINAL PROJECT VIDEO





*That's all Folks!*

[Download Link](#)

[Project Website](#)

