Virtual Reality
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Lecture – 07
Geometry of Virtual Worlds (viewport transform, contd)

Hello everyone welcome back continuing onward, today we are going to change topics a fair amount. Let me just remind you little bit of what we have done so far. So, far I have given you a high level bird's eye view in the first lectures that covered the software hardware, and human sensation perception parts, and then I spent time going over geometric models and transformations that are applied to them, and then went through the entire chain of transformations.

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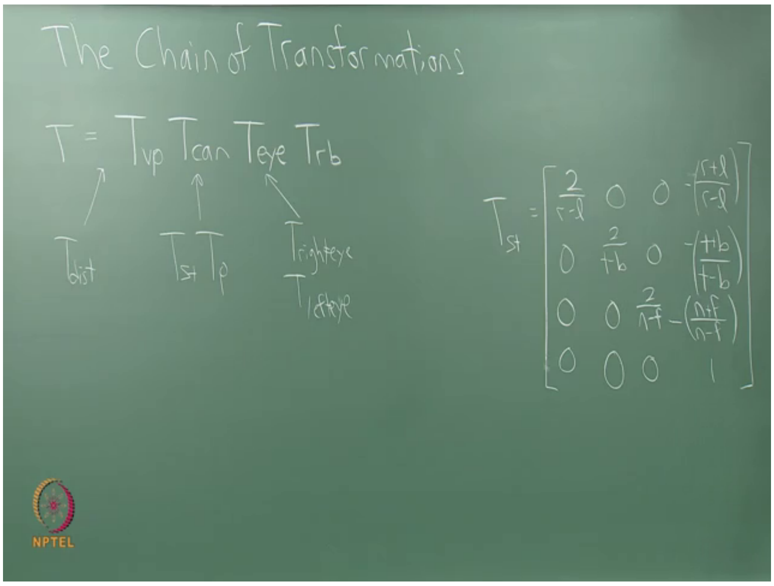

So, that you can go from defining movable objects in the world or movable bodies in the world, and stationary ones put them all together, and then determine through a chain of these transformations, where your points in your original models, where you place them are going to end up on the screen.

So, it will end up with pixel coordinates at the end. And there were several parts to that and not going to cover them all in detail again just wanted to remind you of that, and so we have the rigid body transformation, the eye transformation, the canonical view transformation, and the viewport transformation. And there is going to be a distortion transformation that is applied at the end to cover optical distortions which is something, we are going to talk about today, and also in these matrices the canonical view transform broke down into a scaling, and translation matrix, and a perspective transformation matrix and as one of the student pointed out the end of class yesterday. The scale and translation matrix is a little bit too general for our purposes.

So, we can simplify it a bit because by the way I said everything up in class last time, the viewing frustum is perfectly centered. And so because of that symmetry.

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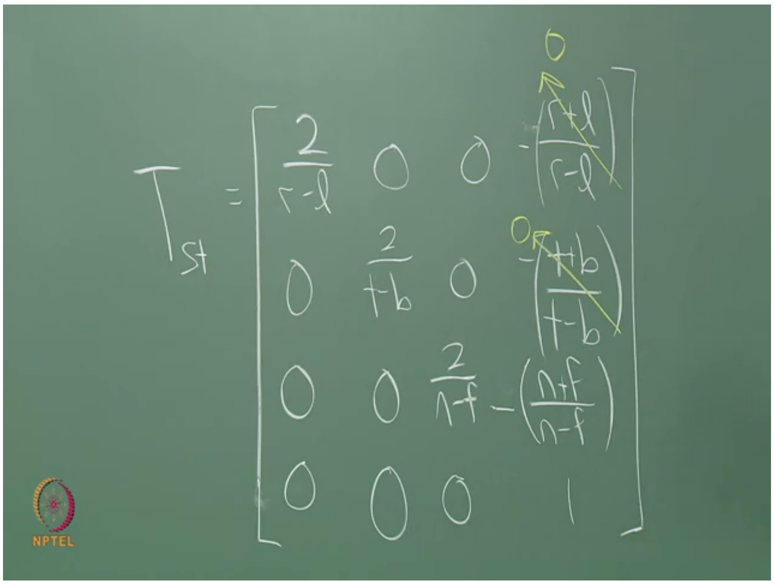

This component goes to 0, and this component goes to 0, because r plus l is 0 and T plus b is 0; however, the near and far planes are not perfectly centered. So, that the origin is directly between them. So, this term stays. So if you want to simplify, and matrix from last time this is how to do that.