# CS405 PROJECT 1 - 3D ANIMATIONS USING CHATGPT

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**Task 1: ChatGPT Transformation Matrix Calculation**

**Our Objective**: Using Chatgpt for computing the transformation matrix for the cube based on given transformations.

**Transformation Details**:

**Translation**: 0.3 units on the x-axis, -0.25 units on the y-axis

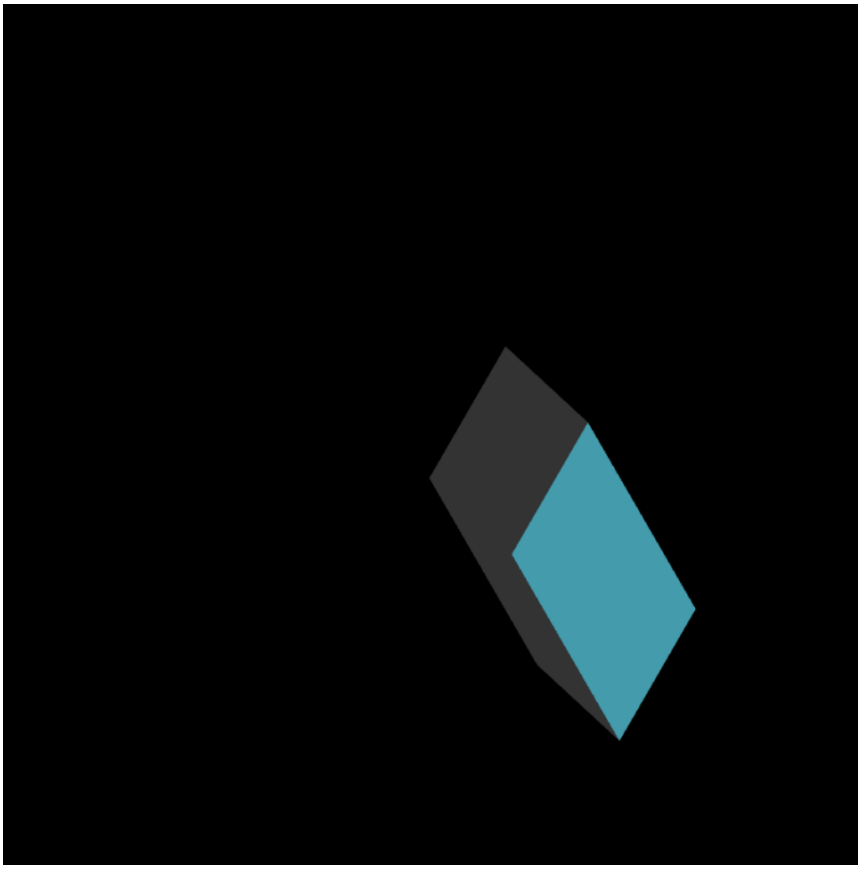
**Scaling**: 0.5 on both the x and y axes

**Rotation**: 30 degrees on the x-axis, 45 degrees on the y-axis, and 60 degrees on the z-axis

**Implementation**:

I pasted the transformations from transformation-prompt.txt into ChatGPT, which returned the final transformation matrix in a Float32Array format. The generated transformation matrix was then added to the getChatGPTModelViewMatrix() function in utils.js.

**Result:**



**Task 2: Manual Transformation Matrix Calculation**

**Our Objective**: I manually recreated the transformation matrix in the getModelViewMatrix() function.

**Implementation**:

I Created individual transformation matrices using functions like createTranslationMatrix(), createScalingMatrix(), and rotation matrices in utils.js. and multiplied these matrices to generate the final model-view matrix.

I Multiplied the matrices in following order:

**Scaling (by 0.5 in x and y)**

**Rotation on Z-axis (60 degrees)**

**Rotation on Y-axis (45 degrees)**

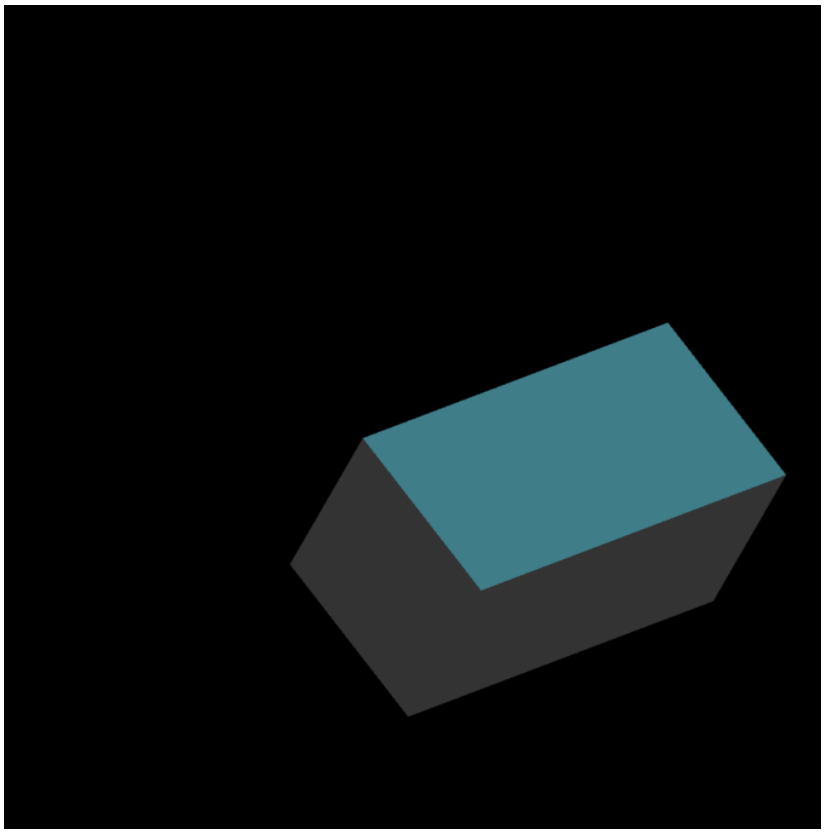
**Rotation on X-axis (30 degrees)**

**Translation(by 0.3 in x and -0.25 in y)**

**Comparison**:

There was difference betweeen manually computed and the matrix provided by ChatGPT.

**Result:**



**Task 3: Animation Creation**

**I** Edited the getPeriodicMovement() function to interpolate the transformation parameters over a 10-second cycle.

For the first 5 seconds, the cube transitions from its original position to the transformed position; in the next 5 seconds, it returns to the initial position.

**Result**: The cube successfully performs the animation in a loop, confirming smooth transitions between positions.

**ChatGPT Link**: https://chatgpt.com/share/67114f92-53c0-800c-b57b-4dc152b2189f