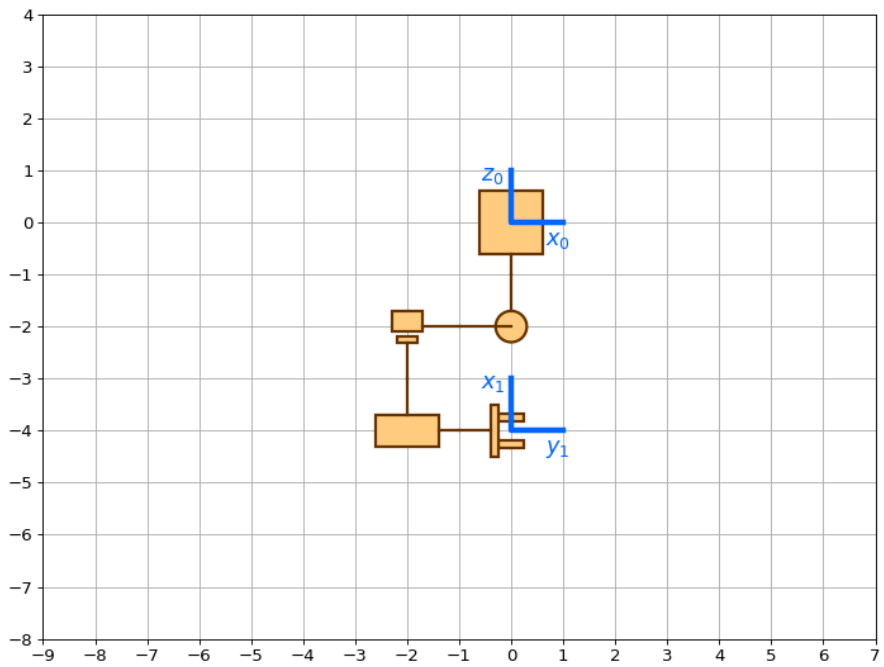
HW5.4. Find the pose of the end-effector frame for a robot with three joints



The schematic of a robot with 3 joints (in the zero position) is shown above. Frame 0 is fixed to the base. Frame 1 is fixed to the end-effector. Denote the joint variables together by $\theta = [\theta_1, \ldots, \theta_3]$. Find the pose T_1^0 of frame 1 when the joint variables take the given values.

Python

```
import numpy as np

theta = np.array([[-0.12, -0.12, 0.02]])
```

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Assume revolute joints are represented as rectangles with the axis of rotation parallel to the longer rectangle side and centered in the rectangle (axis pointing towards the segment out of the rectangle) or by circles if the axis of rotation is orthogonal to the figure (axis pointing outside the screen).

Assume prismatic joints are represented as two rectangles separated by a small gap, with the axis of translation along the line between the midpoints of the two rectangles (axis pointing

Homework 5

Assessment overview

Total points: 11/12

Score: 80%

Question

Value: 1

History: 1 1

Awarded points: 2/3

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towards the small rectangle) or by two squares on top of each other if the axis of translation is orthogonal to the figure (axis pointing outside the screen).

$T_1^0 =$ matrix (rtol=0.01, atol=1e-08)

Save & Grade
Single attempt

Save only

Additional attempts available with new variants