Oriol Manzano
@oriolmanzano.com

How to convert a transformation matrix to translation, rotation and scale vectors

Oriol Manzano
@oriolmanzano.com

1- Extract the Translation: This is the last column of the first three rows.

oriolmanzano.com python

```python
translation = T[0:3, 3]
```

Oriol Manzano
@oriolmanzano.com

2-Extract the upper-left 3x3 Submatrix: This matrix can contain rotation, scale, and possibly shear.

```python
R_s = T[0:3, 0:3]
```

Oriol Manzano
@oriolmanzano.com

3-Decompose the 3x3 Matrix to separate rotation and scale, assuming no shearing for simplicity.

oriolmanzano.com python

```
# Use SVD to decompose the 3x3 matrix
 U, S, Vt = np.linalg.svd(R_s)
 # Assuming no shearing, the rotation matrix can be approximated by
 R = np.dot(U, Vt)
```