**Image Transformations:**

**2D – Transformations:**

1. **Translations – 2 DOF:**

There are 2 - translations.

1. **Euclidean – 3 DOF:**

There are 2 - translations and 1 – rotation

1. **Similarity – 4 DOF:**

There are 2 – translations, 1- rotation and 1 – scaling

1. **Affine – 6 DOF:**

There are 2-translations, 1- rotation, 1- scaling, 1- aspect ratio, 1- shear/skew

1. **Projective – 8 DOF**:

There are 2-translations, 1- rotation, 2- scaling, 2- aspect ratio, 1- shear/skew

**3D – Transformations**

1. **Translations – 3 DOF:**

There are 3 - translations.

1. **Euclidean – 6 DOF:**

There are 3 - translations and 3 – rotation

1. **Similarity – 7 DOF:**

There are 3 – translations, 3- rotation and 1 – scaling

1. **Affine – 12 DOF:**

There are 3-translations, 3- rotation, 3- scaling, 1- aspect ratio, 3- shear/skew

1. **Projective – 15 DOF:**

There are 3-translations, 3- rotation, 3- scaling, 3- aspect ratio, 3- shear/skew