

# Trajectory Estimator (Localization) Basic Pipeline Development:

## Pipeline:

Load the mapping result, includes landmark points and their corresponding normalized averaged descriptor values.

```
trajectory_estimator(initial_pose, map)
{
    trajectory = [initial_pose]
    while(next_frame)
    {
        undistort_image(next_frame)
        get_pose_from_trajectory(trajectory)
        superpoint_extraction(next_frame)
        landmark_projection(pose, map)
        landmark_association(superpoints,
                             projected_landmarks)
        pose_estimate()
        trajectory.append(new_pose)
    }
}
```

## Top Level Unittest - Result (pass)

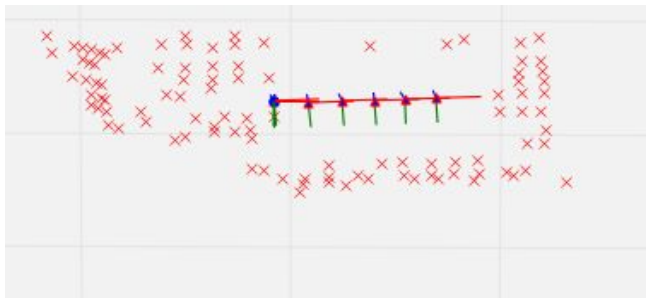


Fig 1. Along the z axis

## Input with collected images - Result (wrong)

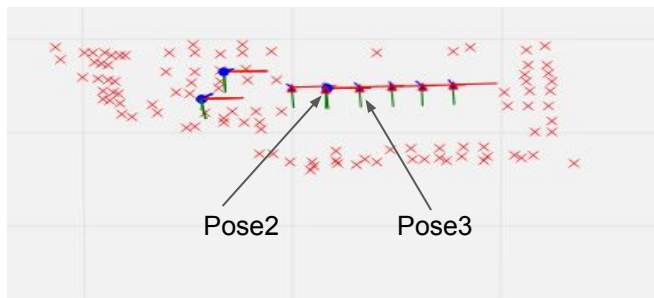


Fig 2. Along the z axis

Red crosses are landmarks. Poses (triangles at the pose origins) are poses generated through the mapping pipeline, which are the ground truths in this unittest.

Inputs:

- The map - Landmark Object (3 lists: landmarks, descriptors, keypoints)
- The first image from the input image set of the mapping pipeline

Output:

- A trajectory of one pose (circle) - list

Inputs:

- The map
- 6 images collected along the x axis from Pose2 to Pose3.

Output:

- A trajectory of six poses (circle)

**Analysis:**

- too few landmarks
- Parameters effect - matched feature key point distances, matched descriptors L2 distances
- The normalized averaged descriptors may cause matching problem and required further analysis.