**Read me**

1. **Data Discovery:** It shows how many percent of data is missing and if the user demand, it can be removed. (**input:** Data 3D; **output:** Figures).
2. **The Eigen Poses Converge:** the function shows the minimum number of poses users need for statical shape model similar to Fig 3a and 3d**.**  (**input:** Data 3D, Threshold of Eigen pose, Threshold of Outliers; **output:** Figures).

Please change the number of body points and link between body points based on your tracked data in function mouse\_plotting.

1. **3D-UPPER estimate the statical shape model:** estimation of Statical shape model (**input:** 3D data, threshold of eigen pose; **output:** Estimate mean RANSAC, Mean pPCA, Covariance matrix, Eigen vectors, Eigen values). This step is based on user demand and 3D-UPPER full has this part inside.
2. **3D-UPPER full** (**input:** Raw data, Threshold of Outliers, Estimate mean RANSAC, Covariance matrix, Eigen vectors, Eigen values; **output:** Reconstructed data).

**In each folder there is main file, the main file should run to see the results.**