3 = Upper arm

*y*

*x*

*z*

*x*

*xi*

*yi*

*yi*

*xi*

Link *i*

Joint *i*

Link *k*

*yk*

*xk*

Joint *k*

Must be *k* > *i*

*x*

*y*

2 = Trunk

*x*

*x*

*y*

*x*

*z*

4 = Lower arm

*y*

1 = Leg

*xi*

*yi*

*yi*

*xi*

Link *i*

Joint *i*

*yEEi*

*xEEi*

End effector

link *i*

*y*

*x*

0 = Foot (base)

**ee**{*i*: [*xii*, *yii*, *zii*]}

Link *i*

End effector

link *i*

**cc**{*i*: [*xii*, *yii*, *zii*]}

**cc**{*k*: [*xik*, *yik*, *zik*]}

Link *i*

Link *k*

**cc**{*i*: [*xii*, *yii*, *zii*]}

- joint frame always parallel to link centroid frame and centered in the joint.

- rules for numbering = see manual ( start from base, follow a branch to the ee, come back to any sub-branch and follow until ee, repeat until branch finished, go next branch).

- *x* does not need to be along link, just simpler. *z* defined by next point, so frame fully defined.

- joint axes must be as specified by *Ez*.

- link *i* has centroid *i* and self-joint *i* (the joint that rotates/translates the link).

- the base is always 0 and no self-joint.

- bodies = links + base

cc =

ce =

ee =

SS =

SE =

BB =