## Edward Venator

EECS 489 PS1

## Adept 550

*All dimensions in mm. All angles in radians.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Link | a | α | d | θ |
| 1 | 300 | 0 | 329.5 | Variable |
| 2 | 250 | Pi | 0 | Variable |
| 3 | 0 | 0 | Variable | 0 |
| 4 | 0 | 0 | 0 | Variable |

For this robot, I chose to set the origin of link 0 at the base mounting point, with the z-axis pointing up. In order to minimize the number of non-zero terms and still have the final link origin coincident with the tool flange, I put parallel revolute joints 1 and 2 along the x-y plane coincident with the tool flange (when prismatic joint 3 is in the 0 position). In order to have the final z-axis point out of the tool, and to make extension of prismatic joint 3 positive, I rotated link 2 180°.

### Parametric equation of laser line:

x = 58.054  
y = 479.7657  
z = 550 – 1\*t

## Kawasaki JS10

*All dimensions in mm. All angles in radians.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Link | a | α | d | θ |
| 1 | 100 | 3 \* Pi / 2 | 0 | Variable |
| 2 | 650 | 0 | 0 | Variable |
| 3 | 0 | Pi / 2 | 0 | Variable |
| 4 | 0 | 3 \* Pi / 2 | 600 | Variable |
| 5 | 0 | Pi / 2 | 0 | Variable |
| 6 | 0 | 0 | 125 | Variable |

For this robot, I chose to set the origin of link 0 at the base mounting point, with the z-axis pointing up. All subsequent choices were made in order to minimize the number of non-zero terms. The z-axis of the final link points out of the tool flange.

### Parametric equation of laser line:

x = -303.1736 – 0.4326 \* t  
y = 730.8653 – 0.6368  
z = -446.9561 – 0.6368

## Robotics Research K-2107HR

All dimensions in ??. All angles in radians.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Link | a | α | d | θ |
| 1 | 0 | Pi / 2 | 20 (est) | Variable |
| 2 | 5.6 | Pi / 2 | 0 | Variable |
| 3 | 4.2 | Pi / 2 | 38 | Variable |
| 4 | 3.5 | Pi / 2 | 0 | Variable |
| 5 | 1.9 | Pi / 2 | 38 | Variable |
| 6 | 1.75 | Pi / 2 | 0 | Variable |
| 7 | 0 | 0 | 4.5 | Variable |

For this robot, I chose to set the origin of link 0 colinear with the first joint and centered over the base, with the x-axis pointing out of the page of the diagram from Robotics Research. I estimated that this point was 20 units back from the axis of the second joint. All subsequent choices were made in order to minimize the number of non-zero terms. Note that the diagram is not shown with zero theta values in all cases. The z-axis of the final link points out of the tool flange.

### Parametric equation of laser line:

x = 18.0231 – 0.0223 \* t  
y = 6.2148 – 0.9989 \* t  
z = 8.7709 – 0.0419 \* t