**ENSC-488: Introduction to Robotics**

**Simon Fraser University Spring 2017**

**Demo 1**

Group #7

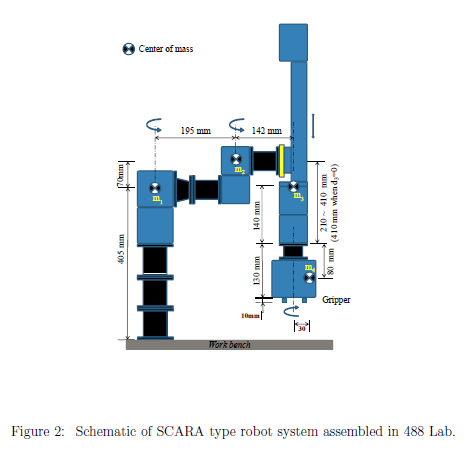
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# Frame assignment:

|  |  |
| --- | --- |
| Label | Length(mm) |
| L1 | 405 |
| L2 | 70 |
| L3 | 195 |
| L4 | 142 |
| L5 | 140 |
| L6 | 80 |
| L7 | 130 |
| L8 | 10 |
| Lmax | 410 |



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| i | alphai-1 | ai-1 | di | thetai |
| 1 | 0 | 0 | L1 | θ1 |
| 2 | 0 | L3 | L2 | θ2 |
| 3 | 0 | L4 | -(Lmax+d3-L5) | 0 |
| 4 | 180 | 0 | L5+L6 | θ4 |
| 5 | 0 | 0 | (L7-L6+L8/2) | 0 |

# Homogenous Matrix Transformations

# Position and Orientation of Tool Frame

, φ =

# Possible inverse kinematic solutions

Step 1: There are two results for

Step 2: have 2 possible solutions because of

Step 3: d3 has one solution