

DH Parameters of Jaco

R&D

Version 1.0.3

August 29, 2011



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Revisions

Version	Primary Author(s)	Description of Version	Date Completed
1.0.1	LJ Caron	First Draft	08-07-2010
1.0.2	LJ Caron	Added Cartesian to angular functions	15-08-2011
1.0.3	LJ Caron	Added angular directions of joints	29-08-2011



Review & Approval

Requirements Specification Approval History

Approving Party	Version Approved	Signature	Date
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Requirements Specification Review History

Reviewer	Version Reviewed	Signature	Date
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1 Introduction

1.1 DH Parameters of Jaco

Theses following parameters are all necessary DH values for kinematics of Jaco.

DH Parameters				
i	$\alpha(i-1)$	$a(i-1)$	d_i	θ_i
1	0	0	D1	q_1
2	$-\pi/2$	0	0	q_2
3	0	D2	0	q_3
4	$-\pi/2$	0	d4b	q_4
5	$2*aa$	0	d5b	q_5
6	$2*aa$	0	d6b	q_6

Robot lenght values (meters)		
D1	0.2102	Base to elbow
D2	0.4100	Arm length
D3	0.2070	Front arm length
D4	0.0750	First wrist length
D5	0.0750	Second wrist length
D6	0.1850	Wrist to center of the hand

Alternate parameters	
aa	$((11.0*\pi)/72.0)$
ca	$(\cos(aa))$
sa	$(\sin(aa))$
c2a	$(\cos(2*aa))$
s2a	$(\sin(2*aa))$
d4b	$(D3 + (ca-c2a/s2a*sa)*D4)$
d5b	$(sa/s2a*D4 + (ca-c2a/s2a*sa)*D5)$
d6b	$(sa/s2a*D5 + D6)$

1.2 Origins of the angles

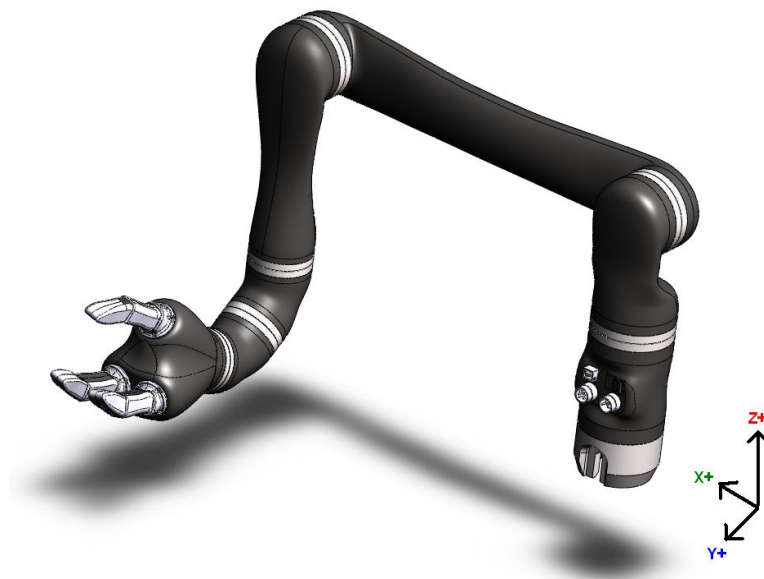


Figure 1 : Origins positions of all 6 axis in regards to DH parameters

1.3 Directions of each joints in angular space

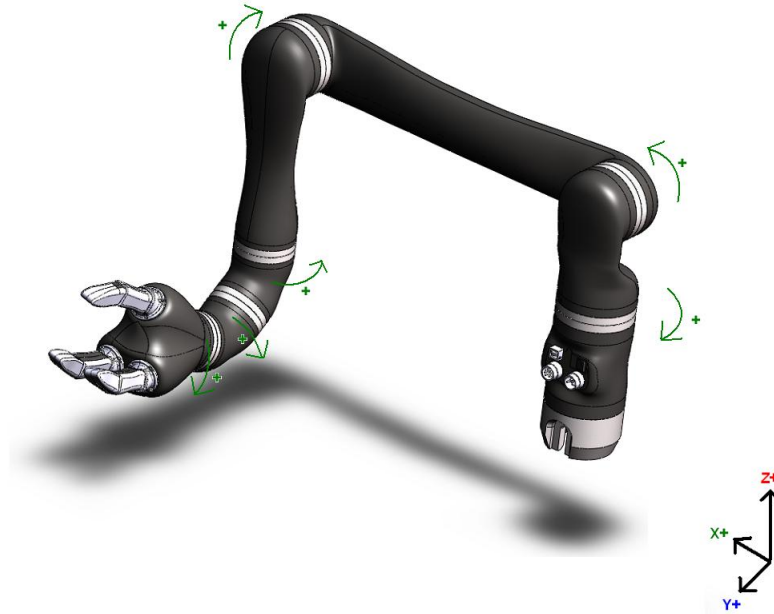


Figure 2 : Directions of each joint in the angular space of the robot

1.4 DH parameters in regards to Jaco arm physical angles

Equations for transformation from DH algorithm to Jaco physical angles
$Q1(\text{Jaco}) = -Q1(\text{DH Algo}) + 180$
$Q2(\text{Jaco}) = Q2(\text{DH Algo}) + 270$
$Q3(\text{Jaco}) = -Q3(\text{DH Algo}) + 90$
$Q4(\text{Jaco}) = -Q4(\text{DH Algo}) + 180$
$Q5(\text{Jaco}) = -Q5(\text{DH Algo}) + 180$
$Q6(\text{Jaco}) = -Q6(\text{DH Algo}) + (180 + 80)$