

Puma 'FKINE' and plot functions

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MatlaDrive Link: <https://drive.matlab.com/sharing/49eb5fa6-0641-425c-a130-9cf41b2e1058>

Deliver:

- 1. Assemble the Robot using the links of the puma, based on the STL parts given.
- 2. Let us try to animate some links

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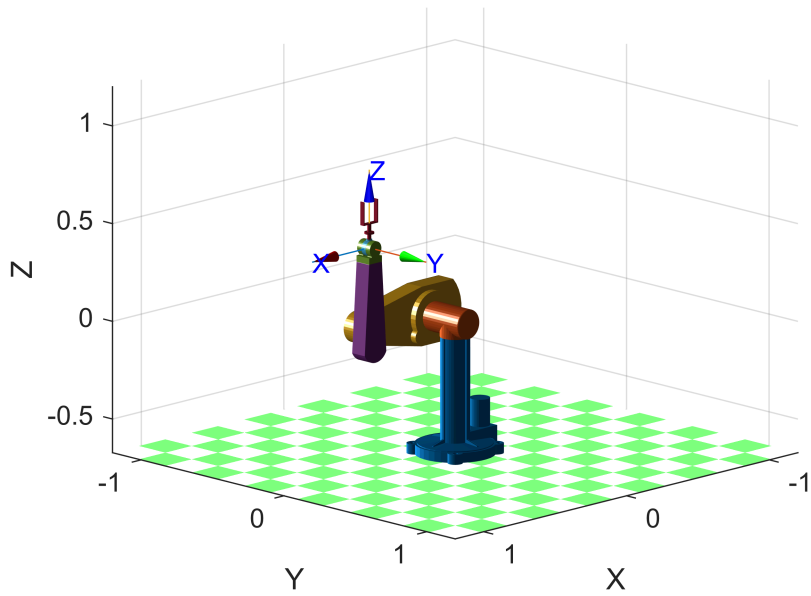
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Model to be followed

Use DH parameters from Standard convection of Puma560

```
mdl_puma560
p560.plot3d([0 0 0 0 0 0])
```

Loading STL models from ARTE Robotics Toolbox for Education by Arturo Gil (<http://arvc.umh.es/arte>).....



p560

p560 =

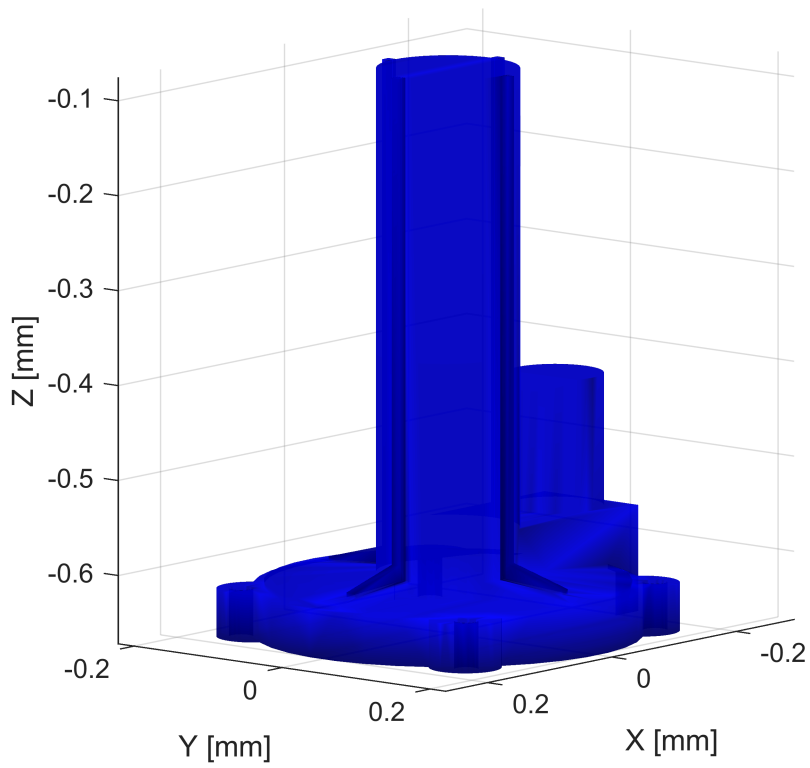
Puma 560 [Unimation]:: 6 axis, RRRRRR, stdDH, slowRNE
- viscous friction; params of 8/95;

j	theta	d	a	alpha	offset
1	q1	0	0	1.5708	0
2	q2	0	0.4318	0	0
3	q3	0.15005	0.0203	-1.5708	0
4	q4	0.4318	0	1.5708	0
5	q5	0	0	-1.5708	0
6	q6	0	0	0	0

Puma Links

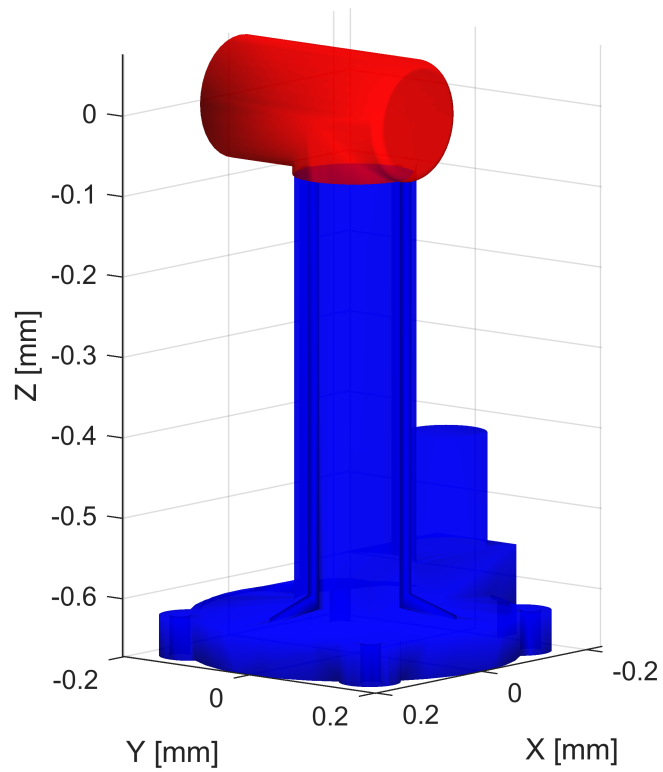
Link 0

```
figure
[V,F, N,name]=stlRead('link0.stl');
FVsPlot(F,V,[0 0 1])
axis equal
view(130, 10)
```



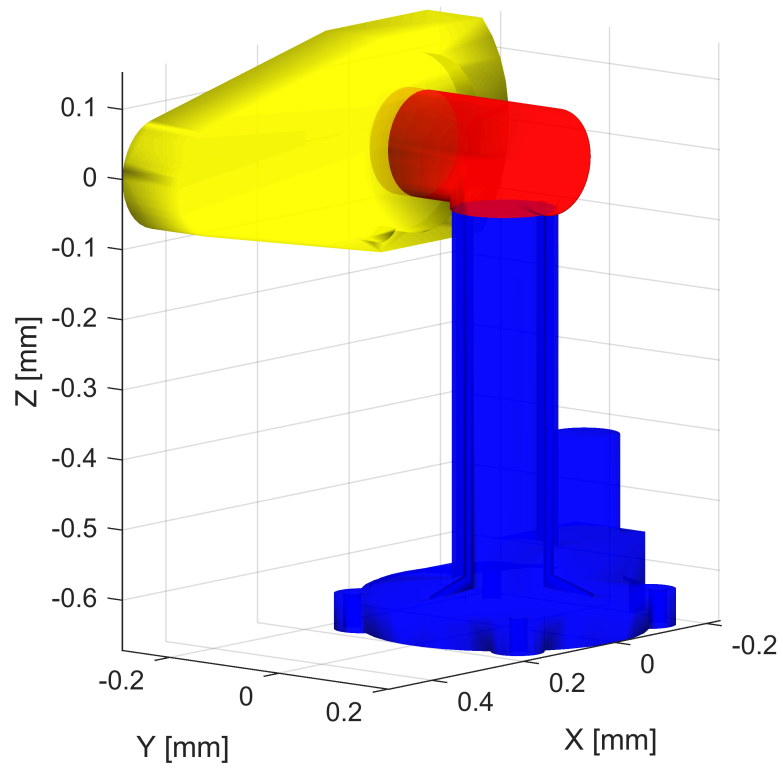
Link 1

```
%figure
hold on
[V,F, N,name]=stlRead('link1.stl');
V = V*rotx(-pi/2);
FVsPlot(F,V,[1 0 0])
axis equal
view(130, 10)
```



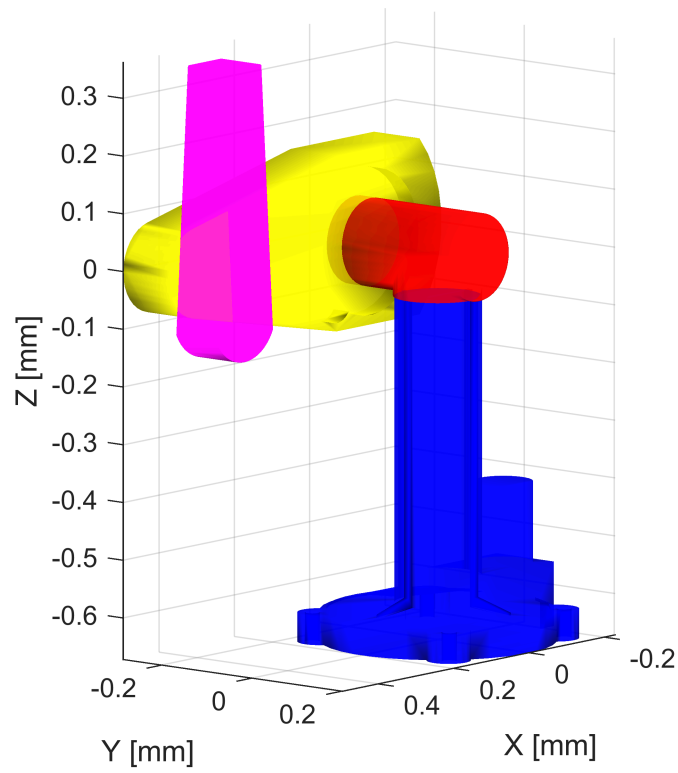
Link 2

```
[V,F, N,name]=stlRead('link2.stl');
V = V*roty(pi/2)*rotx(-pi/2)*rotz(-pi/2)+[0.4318,0,0];
FVsPlot(F,V,[1 1 0])
axis equal
view(130, 10)
```



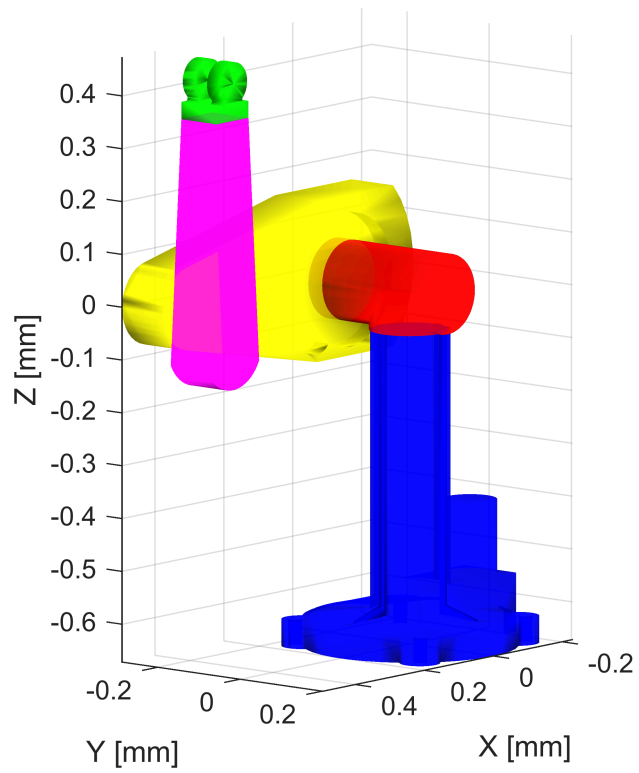
Link 3

```
[V,F, N,name]=stlRead('link3.stl');
V = V+[0.4, -0.14, 0];
FVsPlot(F,V,[1 0 1])
axis equal
view(130, 10)
```



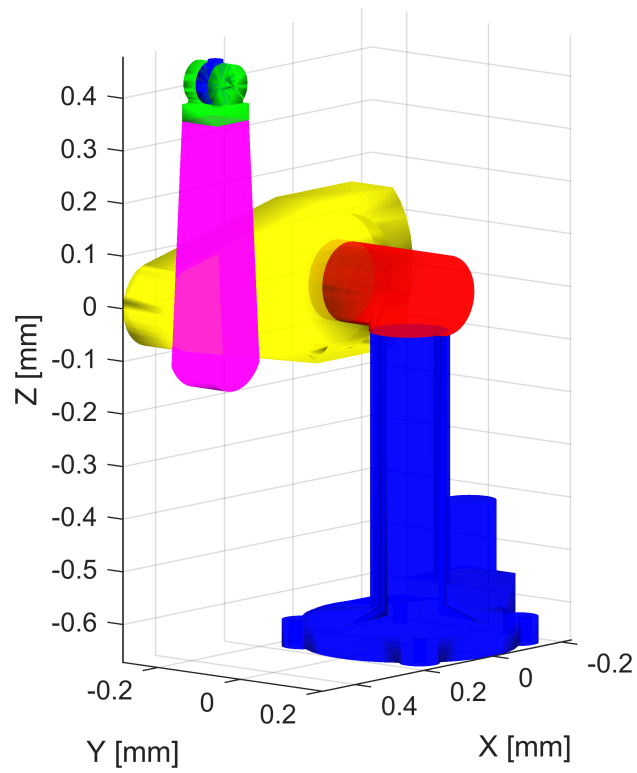
Link 4

```
[V,F, N,name]=stlRead('link4.stl');
V = V*rotx(-pi/2)+[0.4, -0.14, 0.4318];
FVsPlot(F,V,[0 1 0])
axis equal
view(130, 10)
```



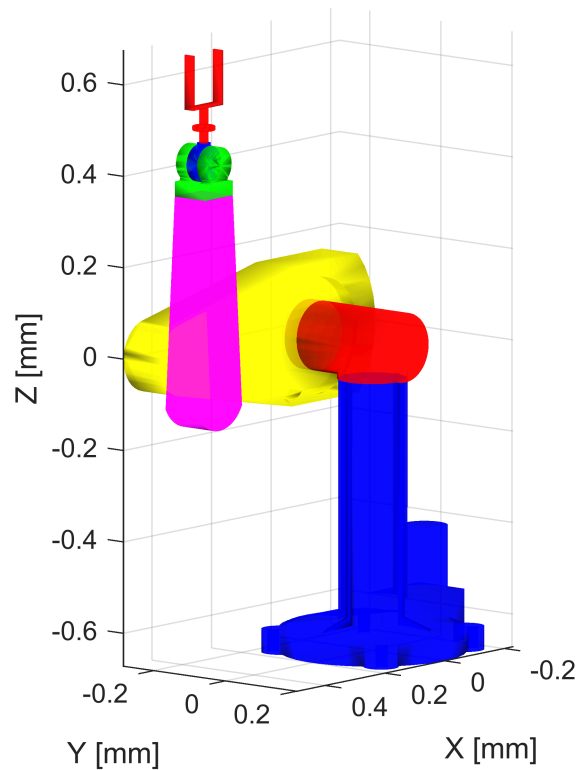
Link 5

```
[V,F, N,name]=stlRead('link5.stl');
V = V+[0.4, -0.14, 0.4318];
FVsPlot(F,V,[0 0 1])
axis equal
view(130, 10)
```



Link 6

```
[V,F, N,name]=stlRead('link6.stl');
V = V+[0.4, -0.14, 0.4318];
FVsPlot(F,V,[1 0 0])
axis equal
view(130, 10)
```

Plot function

```
function T_b_a=FVsPlot(F,V,color)
patch('Faces',F,'Vertices',V,'FaceColor',color, ...
      'FaceAlpha',0.8,...
      'EdgeColor','none', ...
      'FaceLighting','gouraud', ...
      'AmbientStrength', 0.15);

% Add a camera light, and tone down the specular highlighting
camlight('headlight');
material('dull');

grid on
xlabel 'X [mm]'
ylabel 'Y [mm]'
zlabel 'Z [mm]'
end
```