|  |
| --- |
| clear;clc;close all |
|  | % parameters of the aircraft model |
|  | fuse\_l1=1.5; % center of mass to tip of fuselage |
|  | fuse\_l2=1; % center of mass to widest part of fuselage |
|  | fuse\_l3=5; % center of mass to back of fuselage |
|  | fuse\_h=1; |
|  | fuse\_w=1; |
|  | wing\_l=2; % length of wing along fuselage |
|  | wing\_w=6; % wingspan |
|  | tail\_h=1; |
|  | tailwing\_l=1; |
|  | tailwing\_w=3; |
|  |  |
|  | % Define the vertices (physical location of vertices) |
|  | V = [1.5 0 0; 1 0.5 -0.5; 1 -0.5 -0.5; 1 -0.5 0.5; 1 0.5 0.5; -5 0 0; 0 3 0; -2 3 0; -2 -3 0; 0 -3 0; -4 1.5 0; -5 1.5 0; -5 -1.5 0; -4 -1.5 0; -4 0 0; -5 0 -1]; % 16 vertices totally |
|  | % define surfaces as a list of numbered vertices |
|  | F = [1 1 2 3;1 1 3 4;1 1 4 5;1 1 2 5;2 3 6 6;3 4 6 6;4 5 6 6;2 5 6 6; 7 8 9 10;11 12 13 14;15 16 6 6]; |
|  | % define colors for each face |
|  | myred = [1, 0, 0]; |
|  | mygreen = [0, 1, 0]; |
|  | myblue = [0, 0, 1]; |
|  | myyellow = [1, 1, 0]; |
|  | mycyan = [0, 1, 1]; |
|  |  |
|  | colors = [... |
|  | mygreen;... % front top |
|  | mycyan;... % front left |
|  | myblue;... % front bottom |
|  | mycyan;... % front right |
|  | mygreen;... % main top |
|  | mycyan;... % main left |
|  | myblue;... % main bottom |
|  | mycyan;... % main right |
|  | myred;... % wings |
|  | myred;... % tailwing |
|  | myyellow;... % tailfin |
|  | ]; |
|  | % transform vertices from NED to XYZ (for matlab rendering) |
|  | R = [0, 1, 0;... |
|  | 1, 0, 0;... |
|  | 0, 0, -1]; |
|  | V1 = V\*R; |
|  | handle = patch('Vertices', V1, 'Faces', F,'FaceVertexCData',colors,'FaceColor','flat'); |
|  | title('Spacecraft') |
|  | xlabel('East') |
|  | ylabel('North') |
|  | zlabel('-Down') |
|  | hold on |