function [] = get\_TF(Transfer\_Functions)

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function [H] = get\_TF(Transfer\_Functions)

verbose = 1;

syms s

signpost(verbose,'Start: get\_TF()')

**Initialise variables**

signpost(verbose,'Initialise variables')

syms a1 da1 dda1

syms a2 da2 dda2

syms a3 da3 dda3

syms A1 A2 A3

syms tf1\_a1\_T1 tf2\_a2\_T2 tf3\_a3\_T3

syms l1 l2 l3

syms m1 m2 m3

syms Ixx1 Ixx2 Ixx3

syms Iyy1 Iyy2 Iyy3

syms Izz1 Izz2 Izz3

syms T1 T2 T3

**Materialise**

signpost(verbose,'Create Real Values')

Transfer\_Functions = materialise(Transfer\_Functions);

**Collect s**

signpost(verbose,'Collect s')

for i = 1:3

tran(i,1) = rhs(collect(Transfer\_Functions(i,1), s));

end

**Find coefficients of polynomial**

signpost(verbose,'Find coefficients of polynomial')

for i = 1:3

cn = 0;

cd = 0;

if (tran(i,1) ~= 0)

[n, d] = numden(tran(i,1));

[cn, tn] = coeffs(n, s, 'all');

[cd, td] = coeffs(d, s, 'all');

end

eq\_n(i,:) = cn;

eq\_d(i,:) = cd;

end

**Creating Transfer Functions from polynomial**

signpost(verbose,'Creating Transfer Functions from polynomial')

for i = 1:3

[n, d] = numden(tran(i,1));

n = sym2poly(n);

d = sym2poly(d);

H(i,1) = tf(n,d, 'OutputName', strcat('ang\_',int2str(i),' / torque\_', int2str(i)));

end

**Tidy Up**

signpost(verbose,'Done: get\_TF()')

end

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