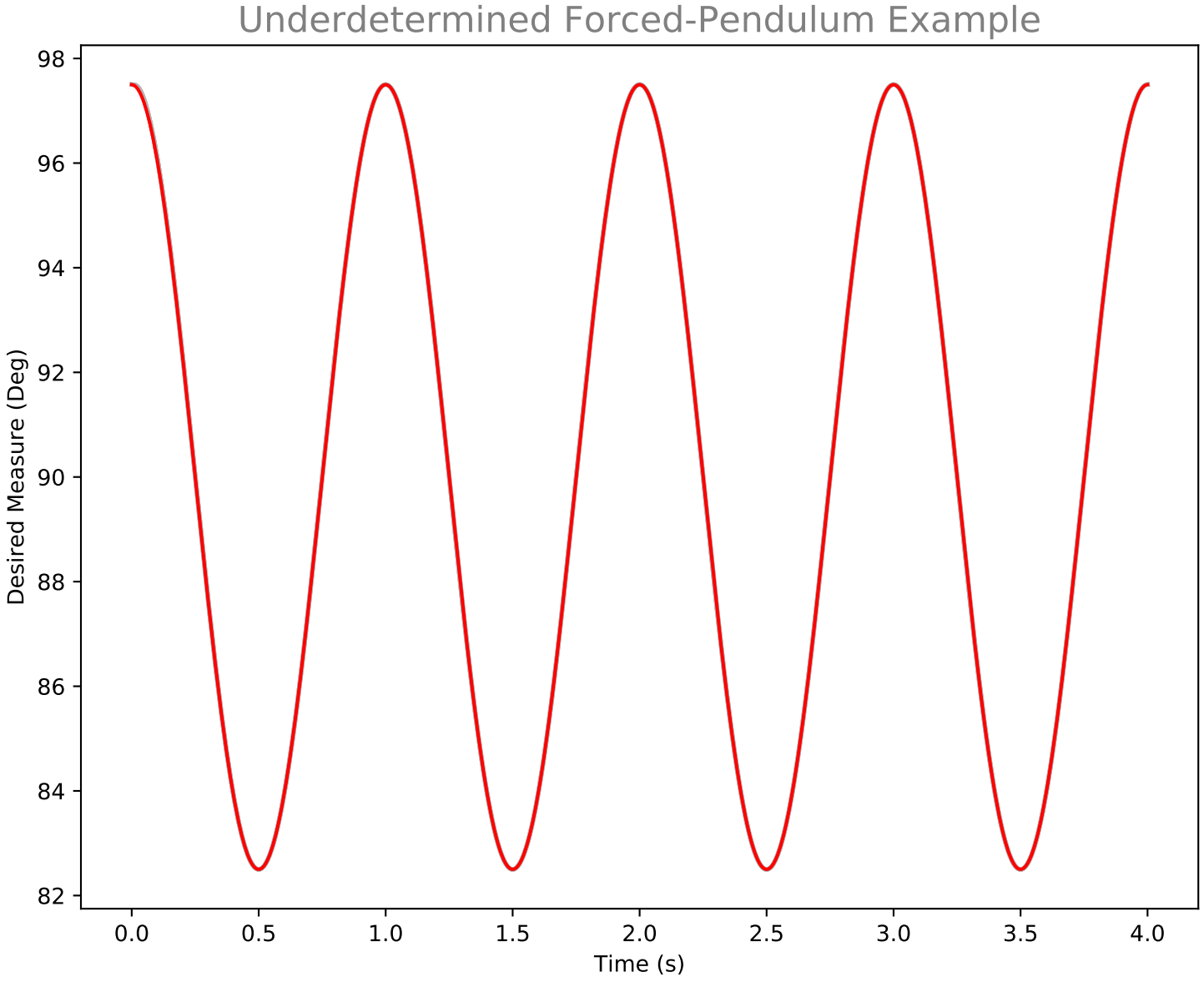
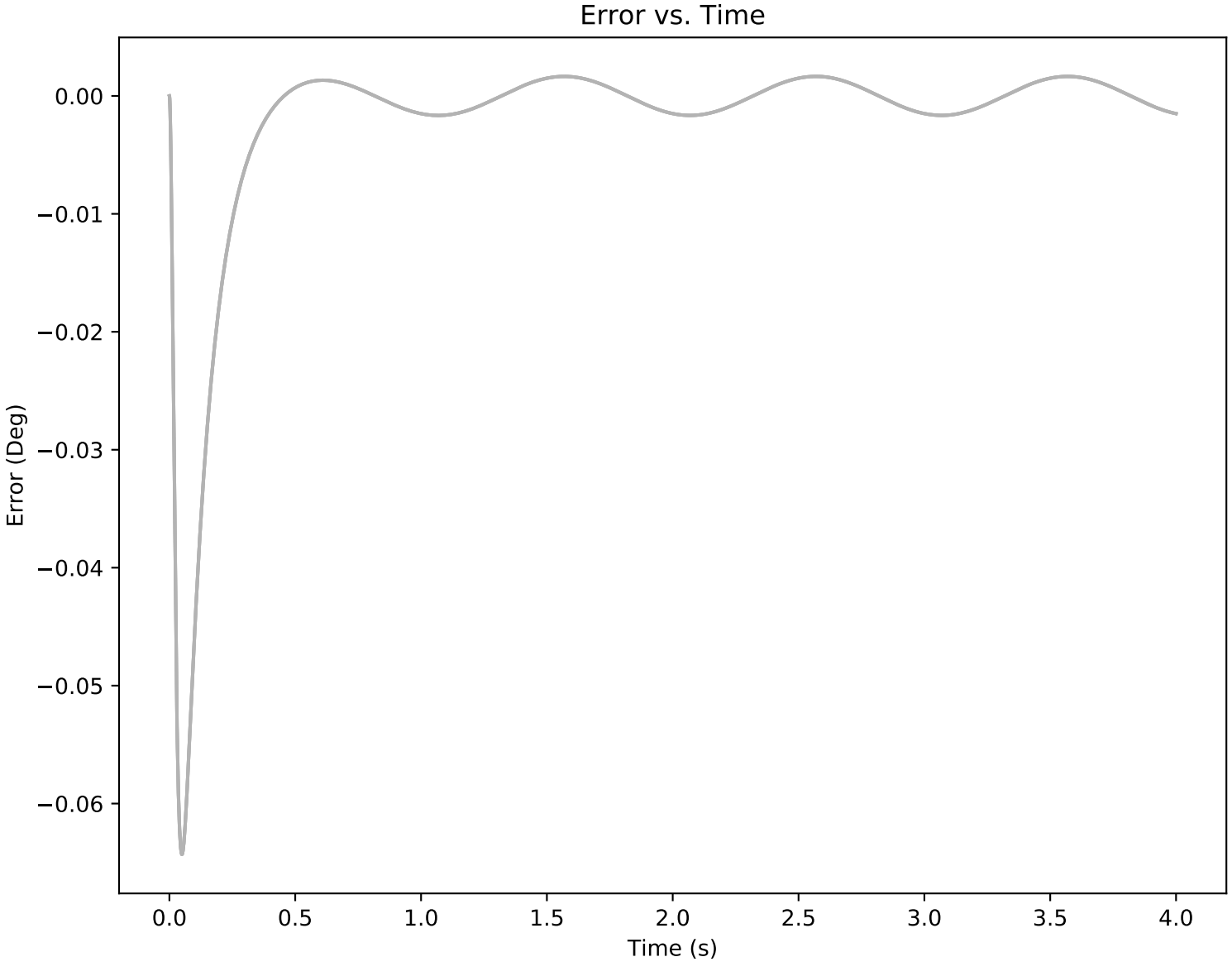
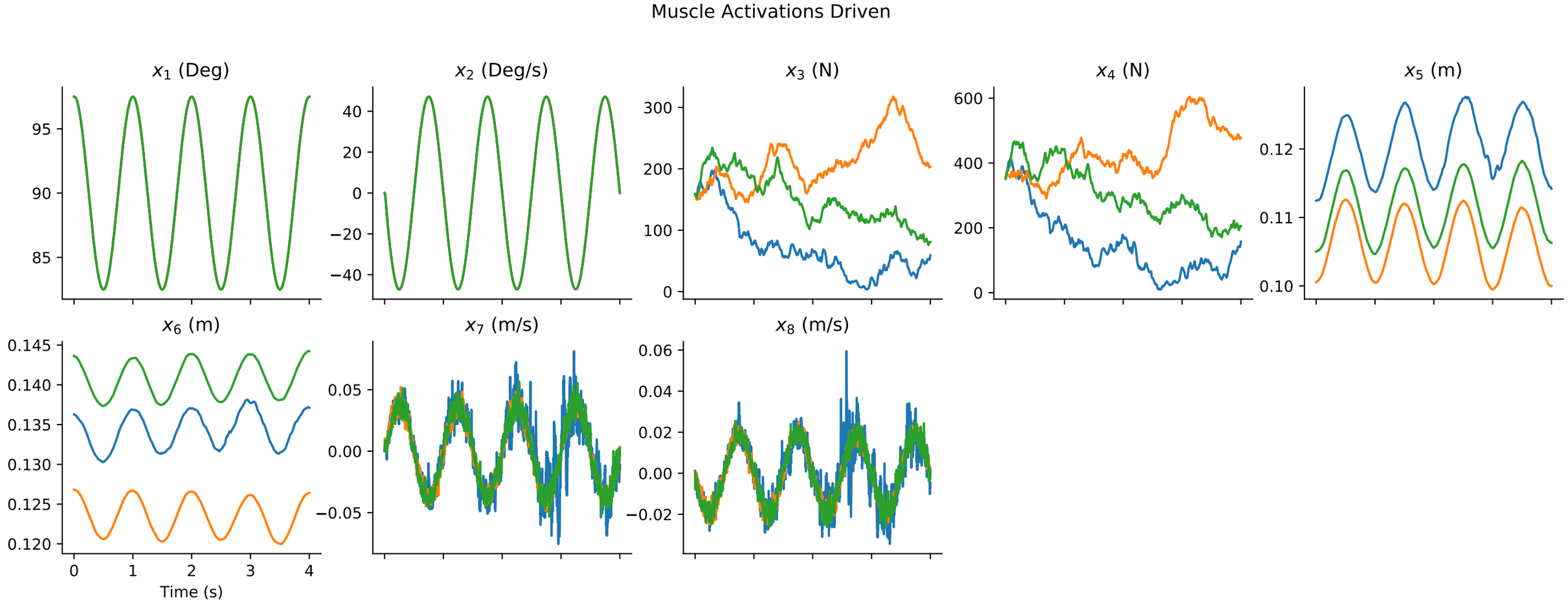
X_o = [[1.70169602e+00 -0.00000000e+00 1.58878080e+02 3.51874528e+02
   1.12449063e-01 1.36282348e-01 0.00000000e+00 0.00000000e+00]
 [1.70169602e+00 -0.00000000e+00 1.58878080e+02 3.51874528e+02
   1.00555223e-01 1.26817096e-01 0.00000000e+00 0.00000000e+00]
 [1.70169602e+00 -0.00000000e+00 1.58878080e+02 3.51874528e+02
   1.05015656e-01 1.43634154e-01 0.00000000e+00 0.00000000e+00]]
U_o = [[0.14966613 0.17483215]
 [0.15372337 0.17611809]
 [0.15164708 0.17435768]]
sigma = 0.000625, mu = 0

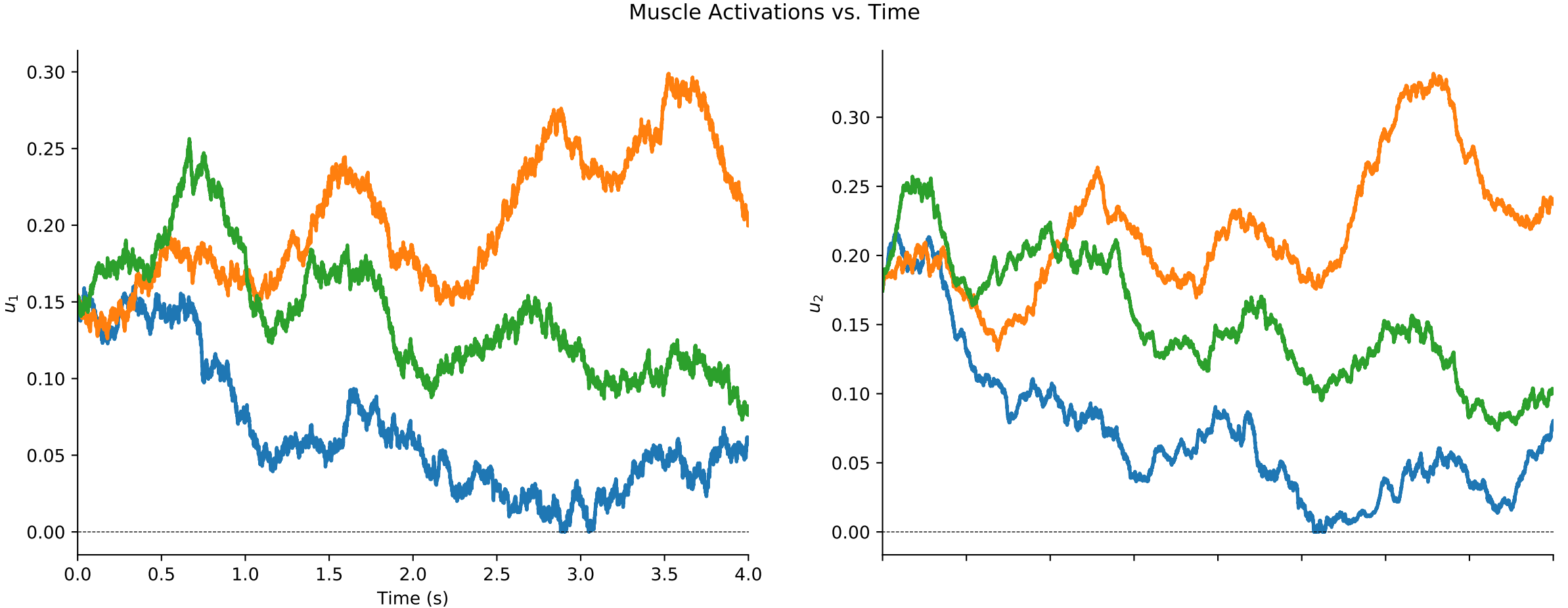
NO SEED!

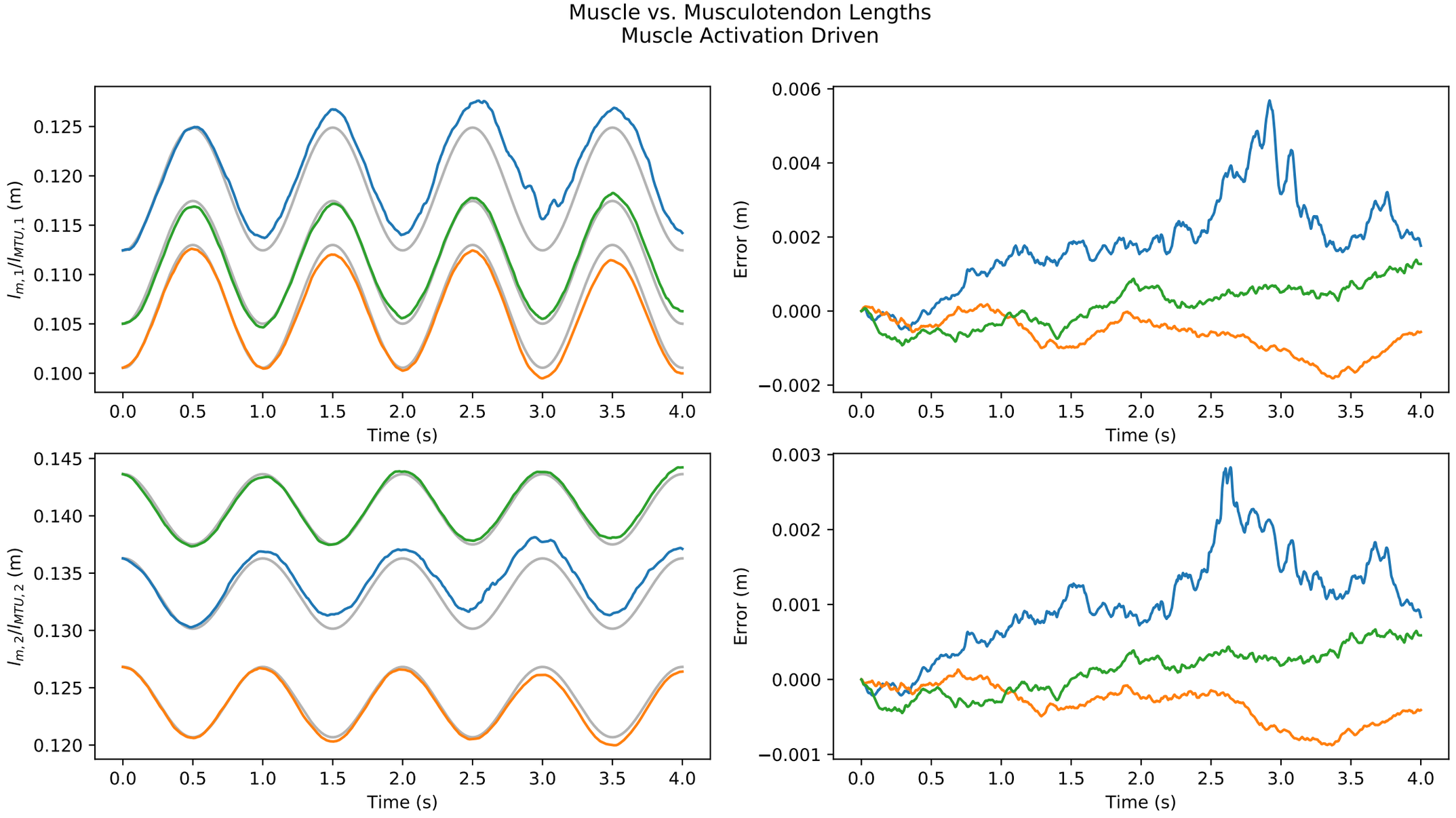
Plots at the end reflect the relationship between tendon tension levels and the corresponding error value for the muscle length when approximated using the MTU velocity integration technique.

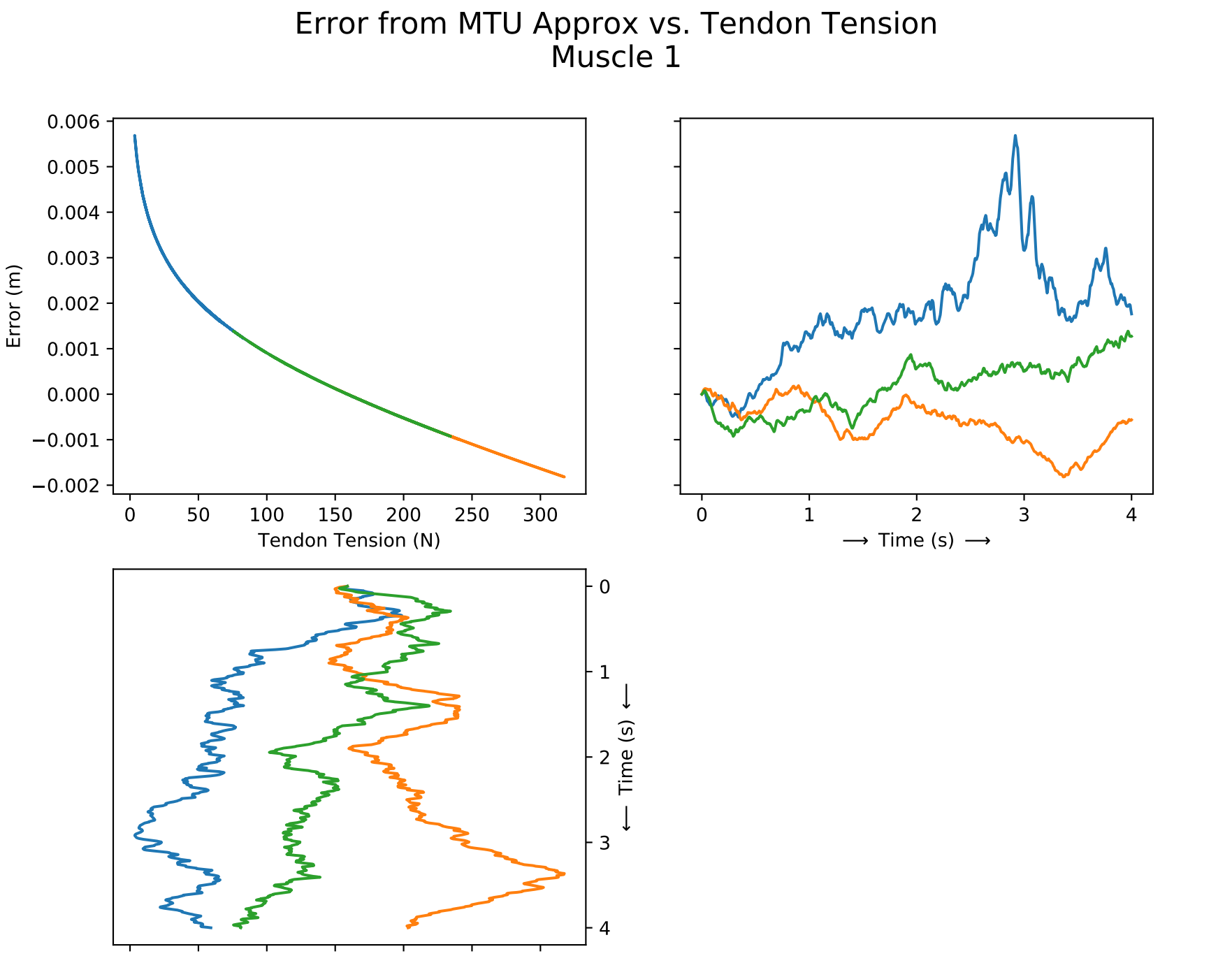

Underdetermined Forced-Pendulum Example
Desired Measure (Deg)
98
96
94
92
90
88
86
84
82
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Time (s)

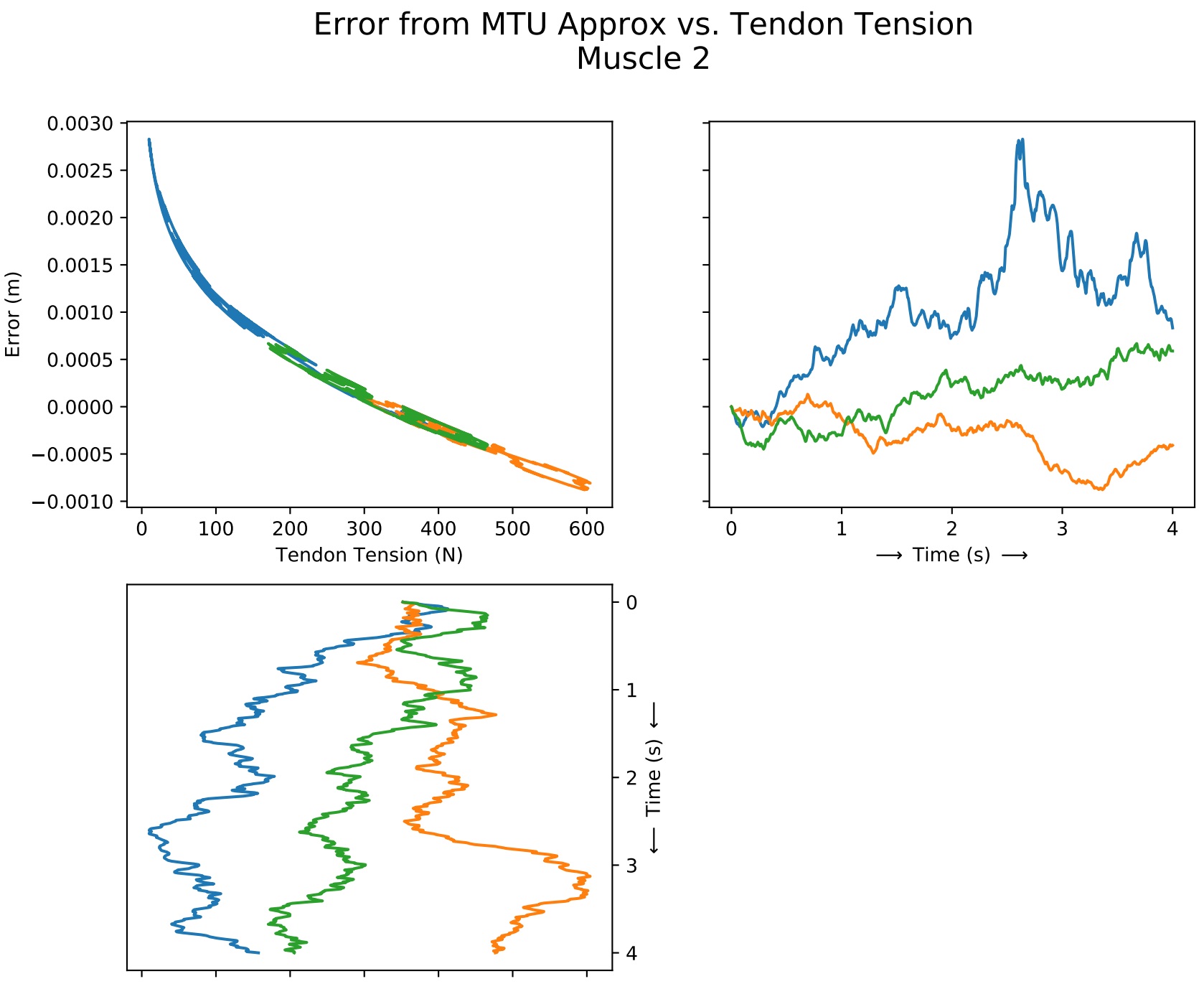

Error vs. Time
0.00
−0.01
−0.02
−0.03
−0.04
−0.05
−0.06
Error (Deg)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Time (s)


Muscle Activations Driven
x_1 (Deg)
x_2 (Deg/s)
x_3 (N)
x_4 (N)
x_5 (m)
x_6 (m)
x_7 (m/s)
x_8 (m/s)
Time (s)


Muscle Activations vs. Time
u_1
u_2
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Time (s)


Muscle vs. Musculotendon Lengths
Muscle Activation Driven
$l_{m,1}/l_{MTU,1}$ (m)
0.125
0.120
0.115
0.110
0.105
0.100
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Time (s)
Error (m)
0.006
0.004
0.002
0.000
−0.002
Time (s)
$l_{m,2}/l_{MTU,2}$ (m)
0.145
0.140
0.135
0.130
0.125
0.120
Time (s)
Error (m)
0.003
0.002
0.001
0.000
−0.001
Time (s)


Error from MTU Approx vs. Tendon Tension
Muscle 1
Error (m)
0.006
0.005
0.004
0.003
0.002
0.001
0.000
−0.001
−0.002
0
50
100
150
200
250
300
Tendon Tension (N)
0
1
2
3
4
⟶ Time (s) ⟶
0
1
2
3
4
⟵ Time (s) ⟵


Error from MTU Approx vs. Tendon Tension
Muscle 2
Error (m)
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
−0.0005
−0.0010
0
100
200
300
400
500
600
Tendon Tension (N)
0
1
2
3
4
⟶ Time (s) ⟶
0
1
2
3
4
⟵ Time (s) ⟵