Model Predictive Control of a two link manipulator

Simulation Model

Two Link Robot Arm

```
function ddx = fcn(x,dx,u)

M1 = 1;
M2 = 1;
L1 = 1;
L2 = 1;
g = 9.81;
G = [-(M1+M2)*g*L1-M2*g*L2*sin(x(1)+x(2));...
    -M2*g*L2*sin(x(1)+x(2));];
C = [M1*L1*L2*(2*dx(1)*dx(2) + dx(1)^2)*sin(x(2));...
    -M2*L1*L2*dx(1)*dx(2)*sin(x(2));];
M = [-(M1+M2)*L1^2 + M2*L2^2 + 2*M2*L1*L2*cos(x(2)), M2*L2^2 + M2*L1*L2*cos(x(2));...
    M2*L2^2 + M2*L1*L2*cos(x(2)),  M2*L2^2;];
ddx = inv(M)*(-C-G+u);
```
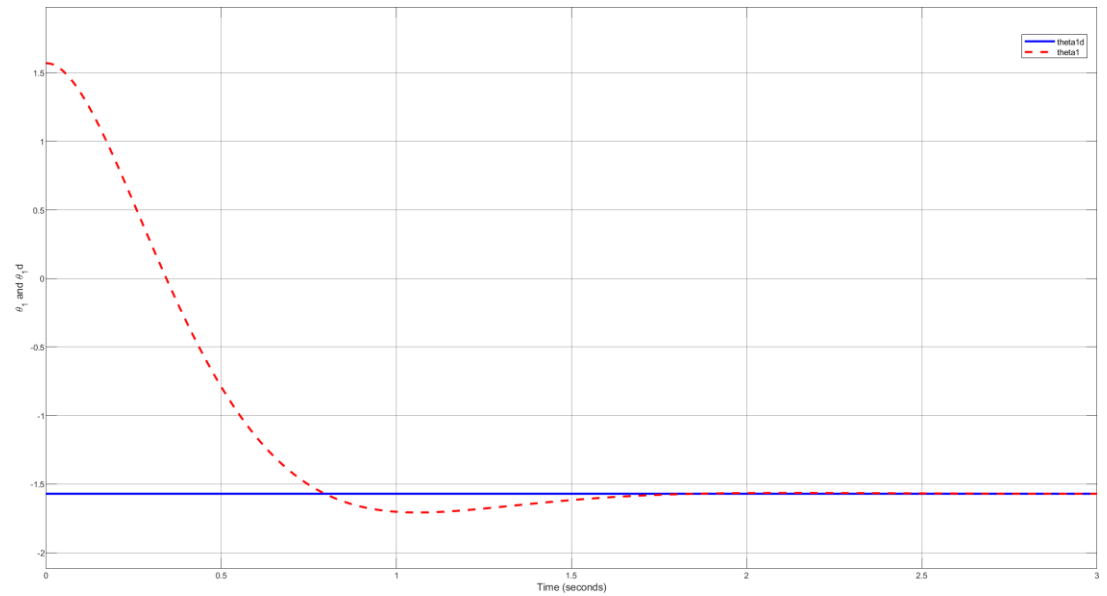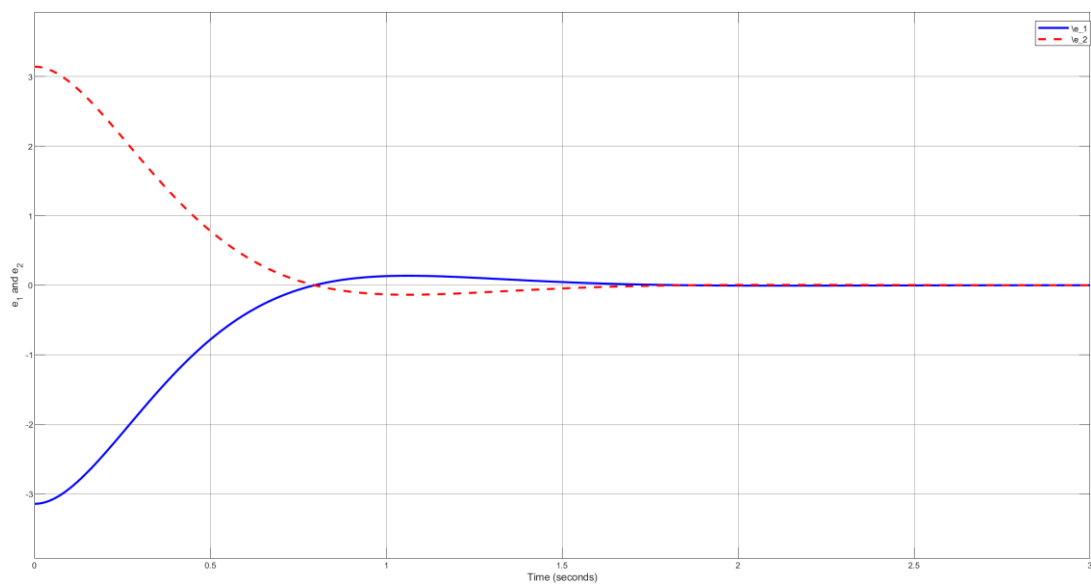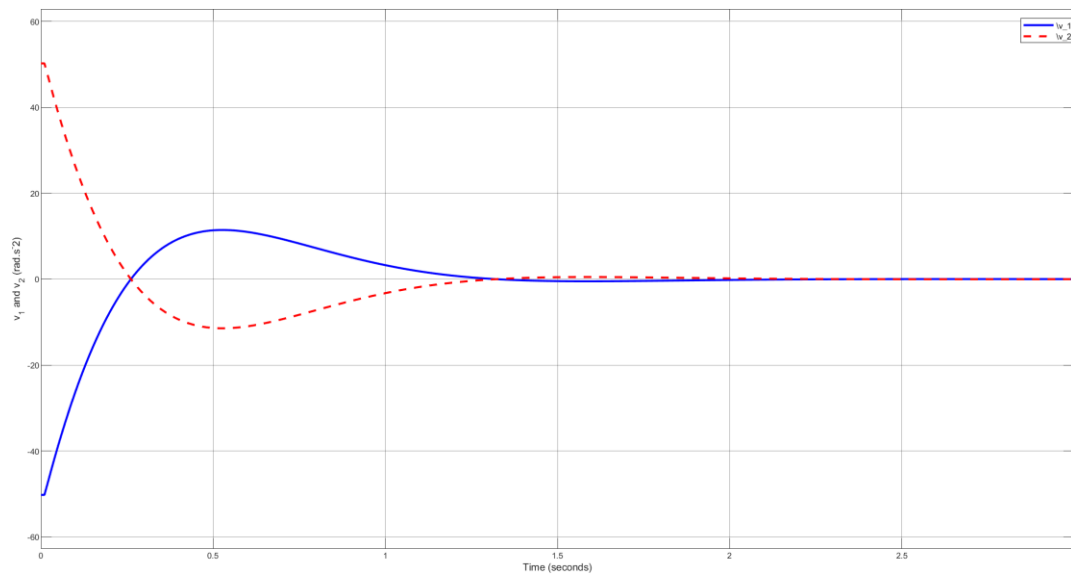
Controller

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Results

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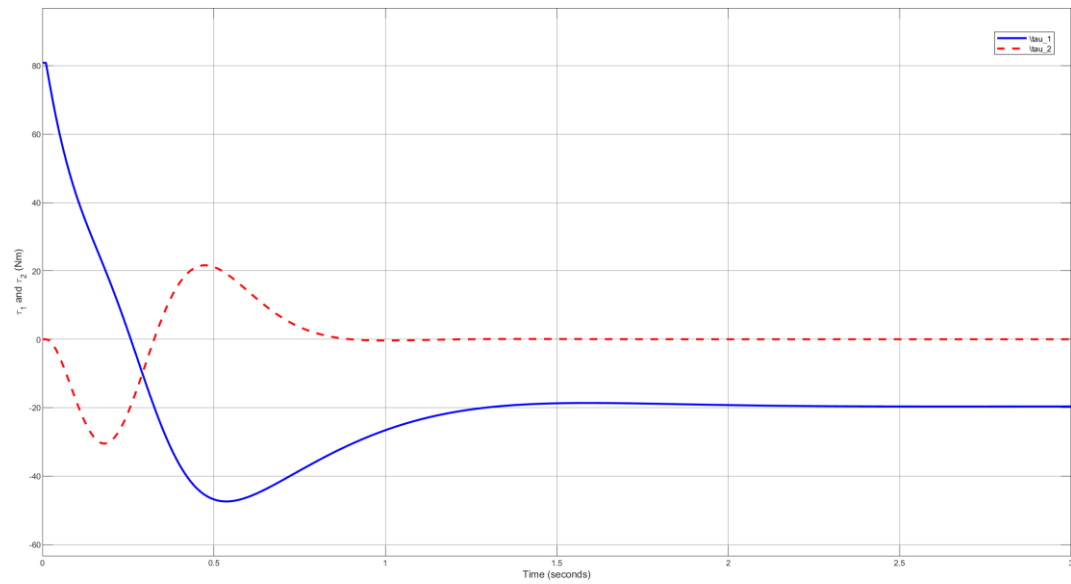Department of Mechanical Engineering, Thapar Institute of Engineering and Technology

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References

[1] Guechi, El-Hadi, et al. "Model Predictive Control of a Two-Link Robot Arm." 2018 International Conference on Advanced Systems and Electric Technologies (IC_ASET), IEEE, 2018, doi:10.1109/aset.2018.8379891.

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