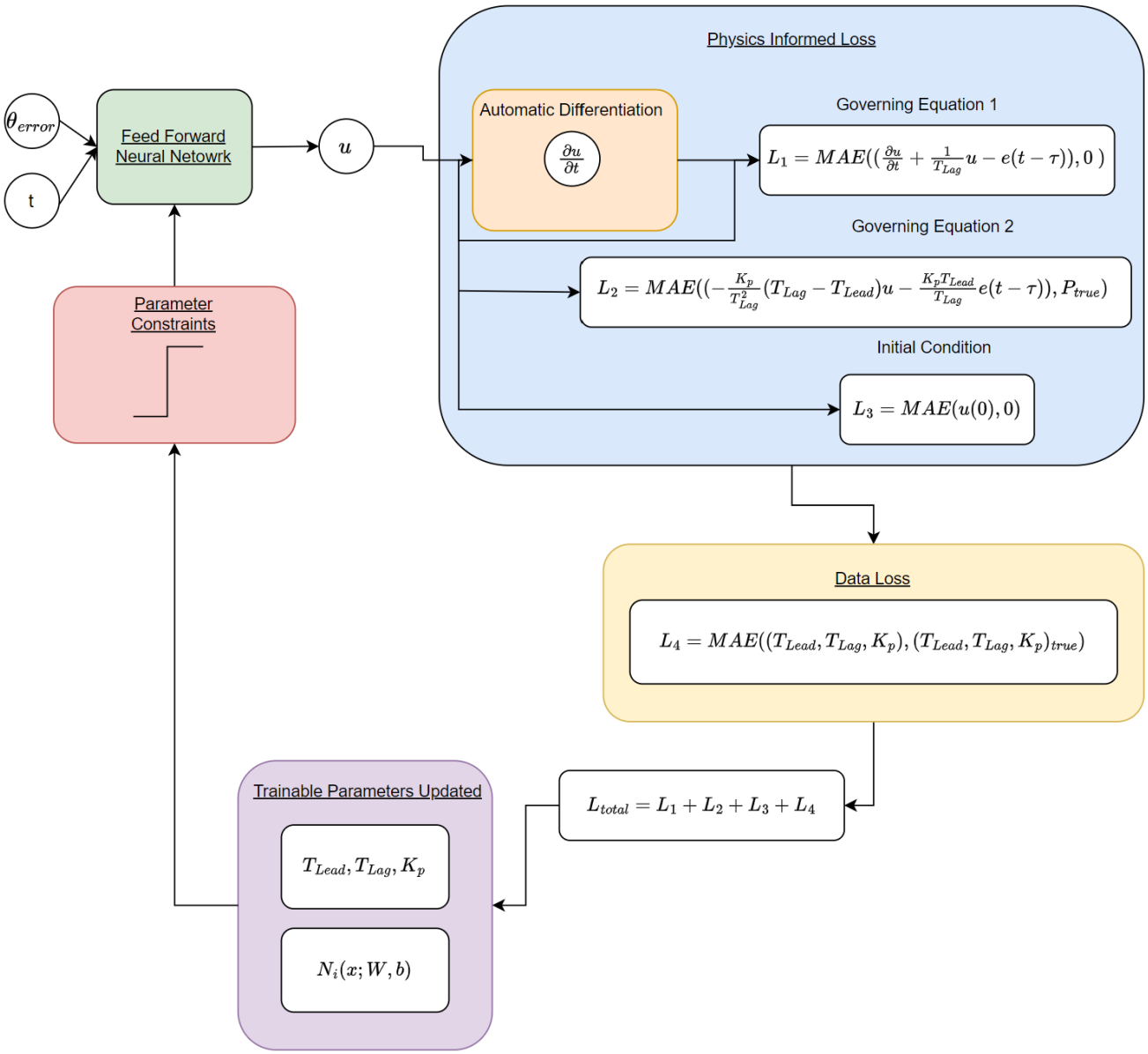
Google Colab Code 1.1 Notes

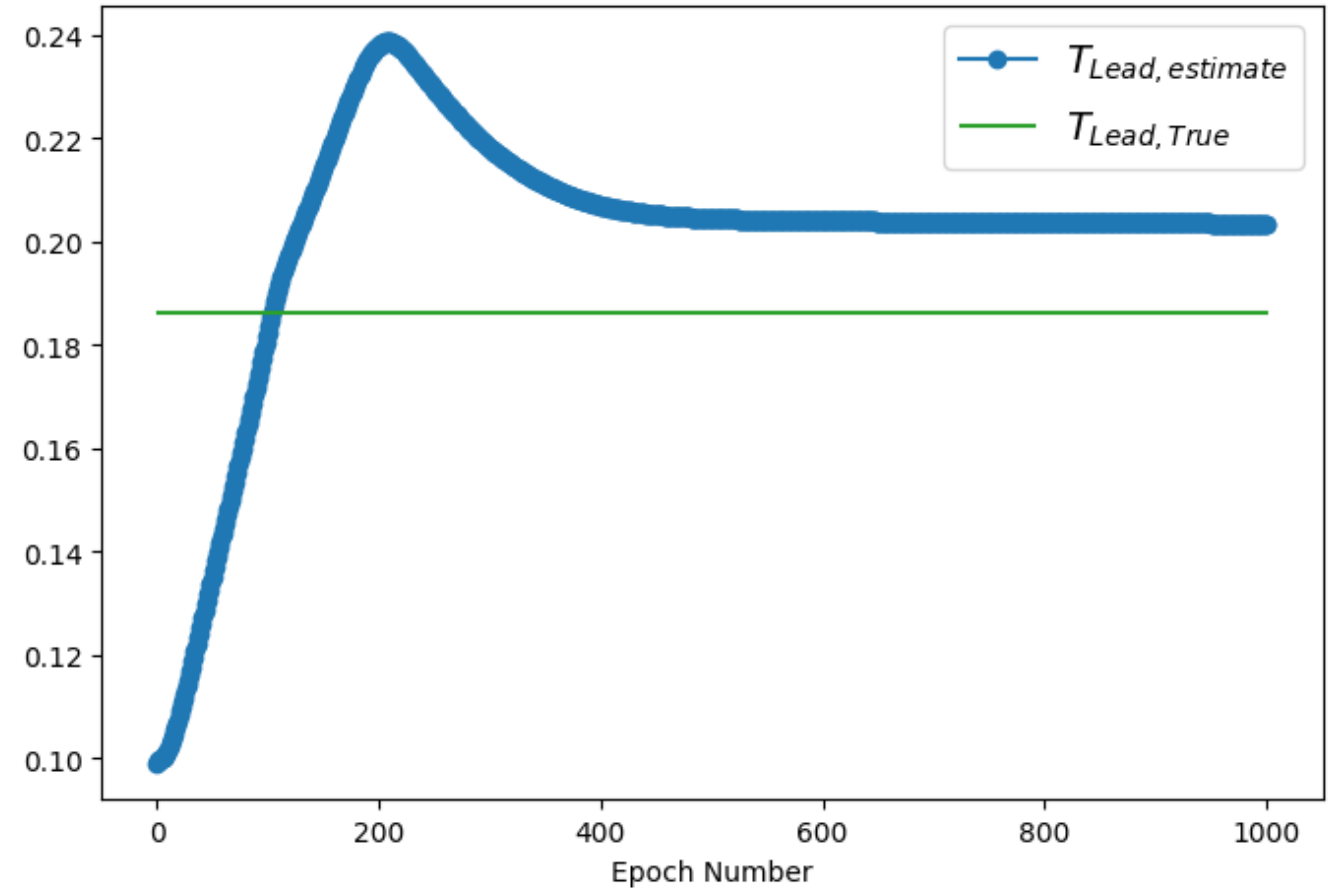
In an effort to get the parameters to converge to their true values we want to add a forcing function in the form of an addition to the loss function to force the parameters to reach to their true values instead of converging to a combination of parameters that lead to a minimized loss function.

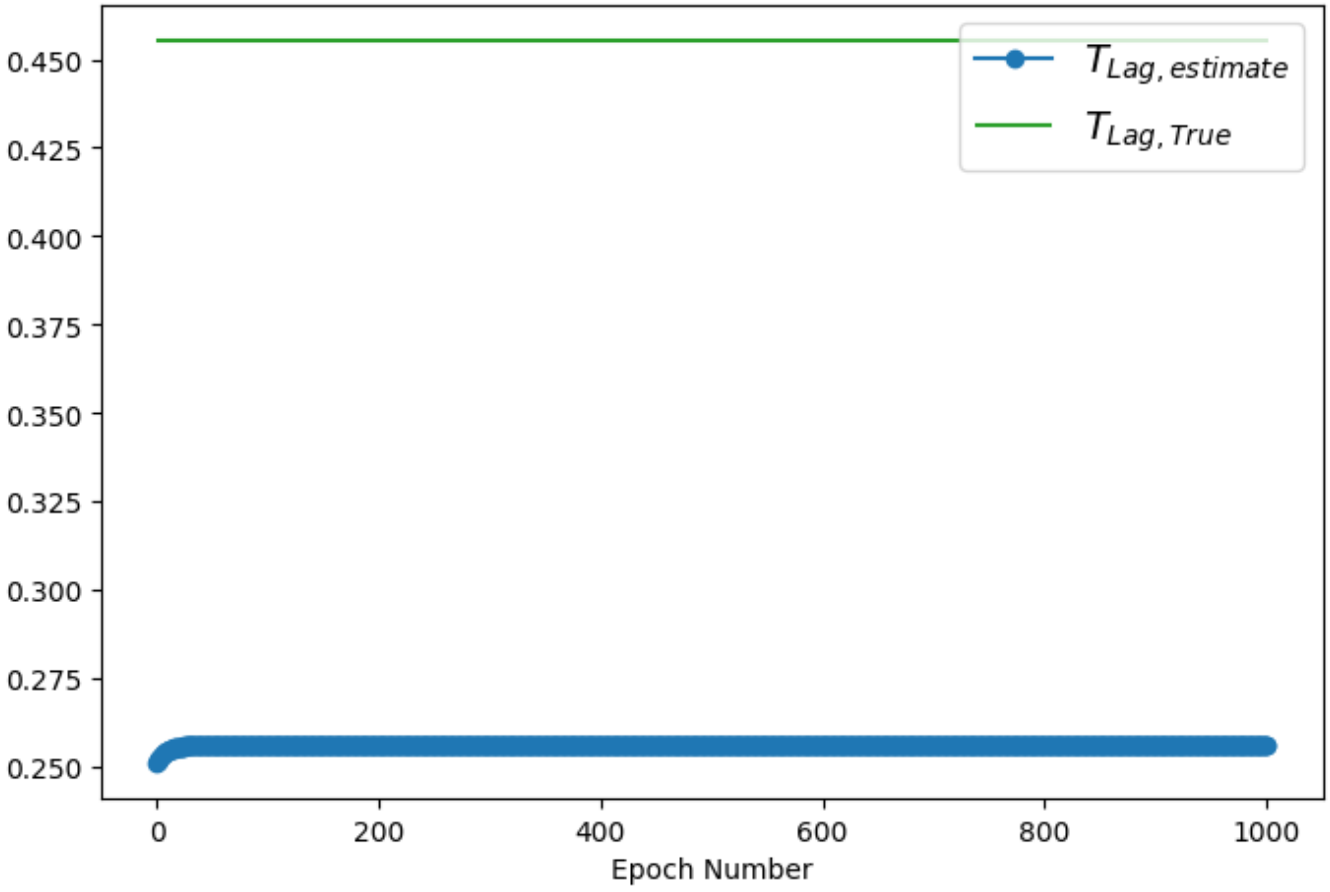
We add $MAE((T_{Lead}, T_{Lag}, K_p), (T_{Lead}, T_{Lag}, K_p)_{true})$ to the loss function

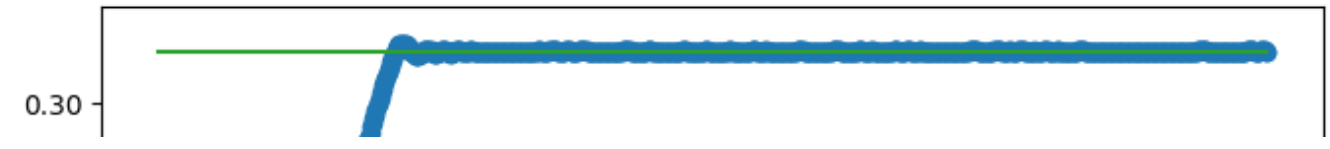
See architecture below

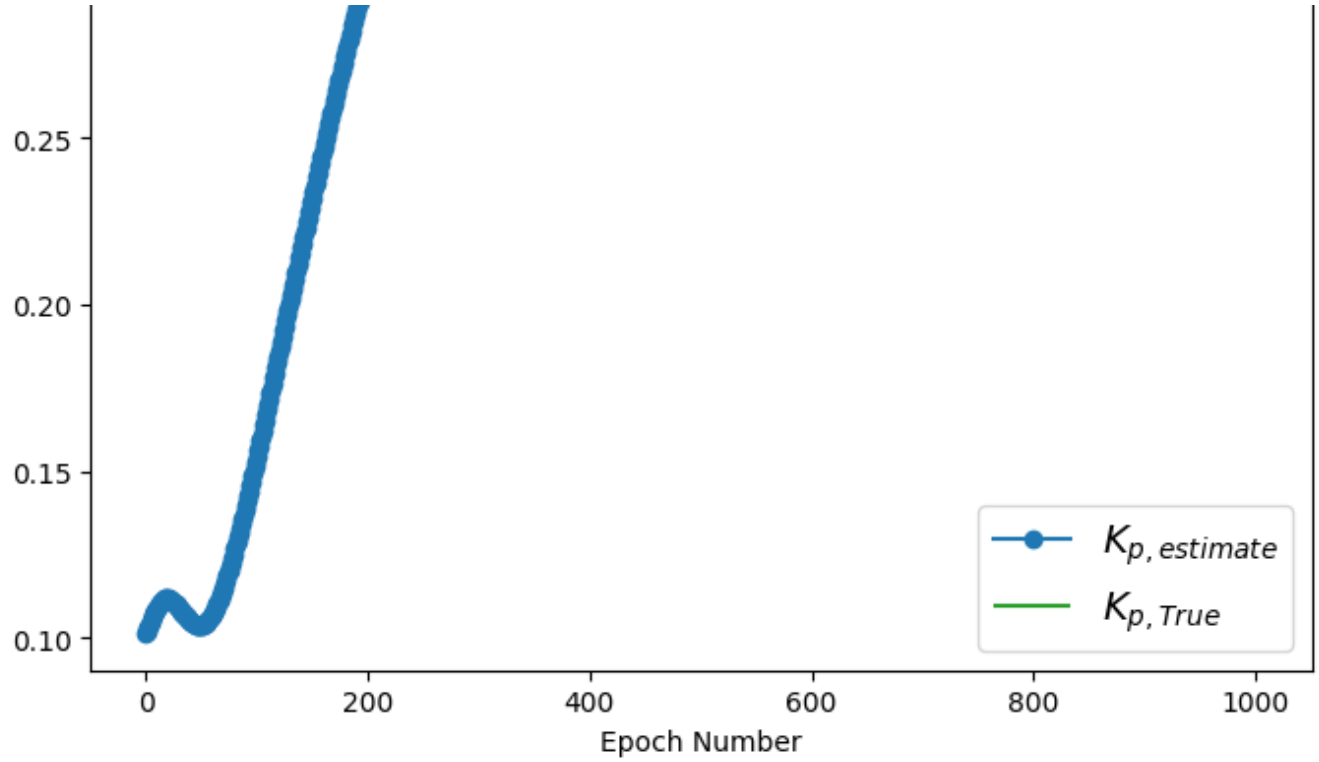


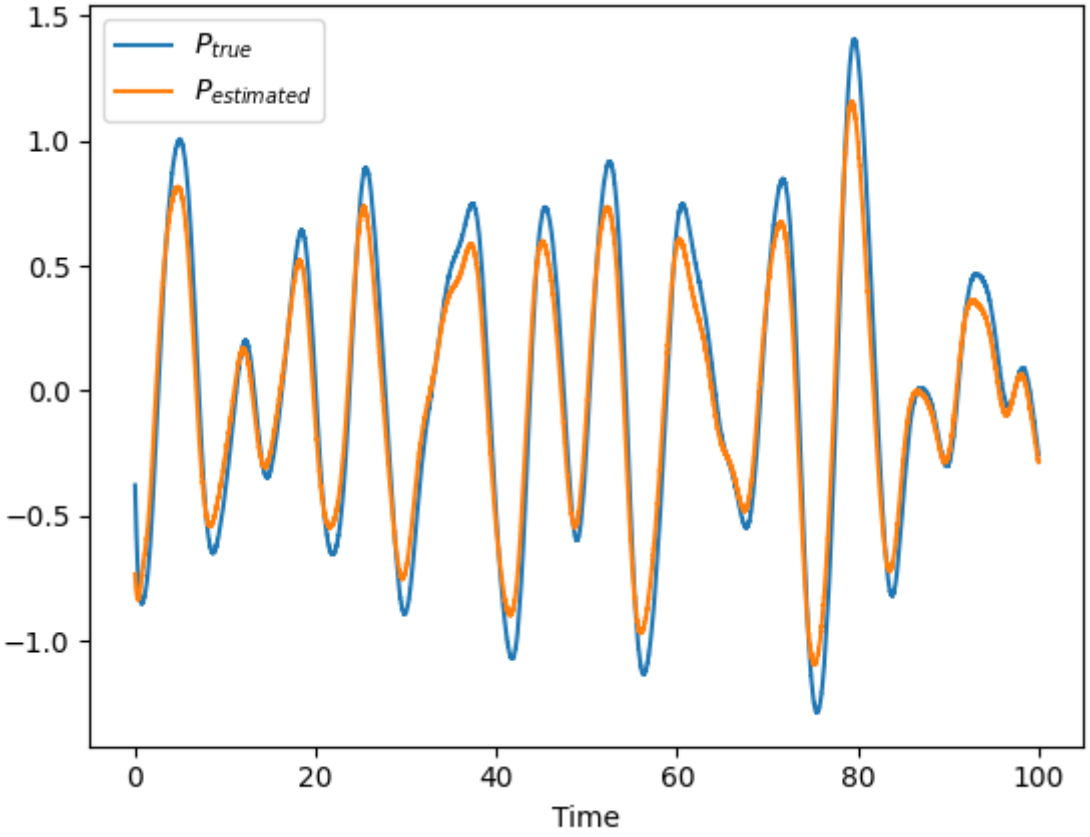
Results:


0.24
0.22
0.20
0.18
0.16
0.14
0.12
0.10
0
200
400
600
800
1000
Epoch Number
$T_{Lead,estimate}$
$T_{Lead,True}$


0.450
0.425
0.400
0.375
0.350
0.325
0.300
0.275
0.250
0
200
400
600
800
1000
Epoch Number
$T_{Lag,estimate}$
$T_{Lag,True}$


0.30


0.25
0.20
0.15
0.10
0
200
400
600
800
1000
Epoch Number
$K_{p,\,estimate}$
$K_{p,\,True}$


1.5
1.0
0.5
0.0
−0.5
−1.0
0
20
40
60
80
100
Time
P_{true}
$P_{estimated}$