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- More examples: https://github.com/vasanza/Matlab_Code
- Read more: https://vasanza.blogspot.com/

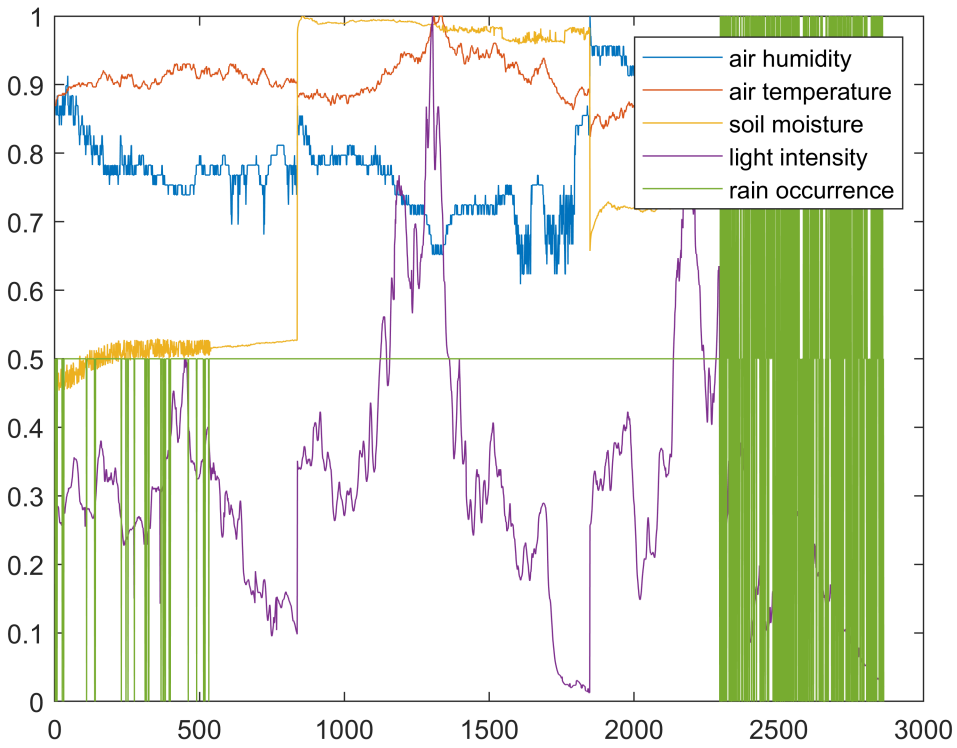
Initialization

```
clear;clc;
path = fullfile('./Data/agriculture.mat');
Datos=load(path);Datos=Datos.Datos;
nDatos=(Datos./max(Datos));

% inputs: Item, air humidity, air temperature, soil moisture, light and rain
input=nDatos(1:length(nDatos)-1,2:6);
% output: soil moisture in the following time step
output=nDatos(2:length(nDatos),4);
```

Data Visualization

```
plot(input)
legend('air humidity', 'air temperature', 'soil moisture', 'light intensity', 'rain occurrence'
```



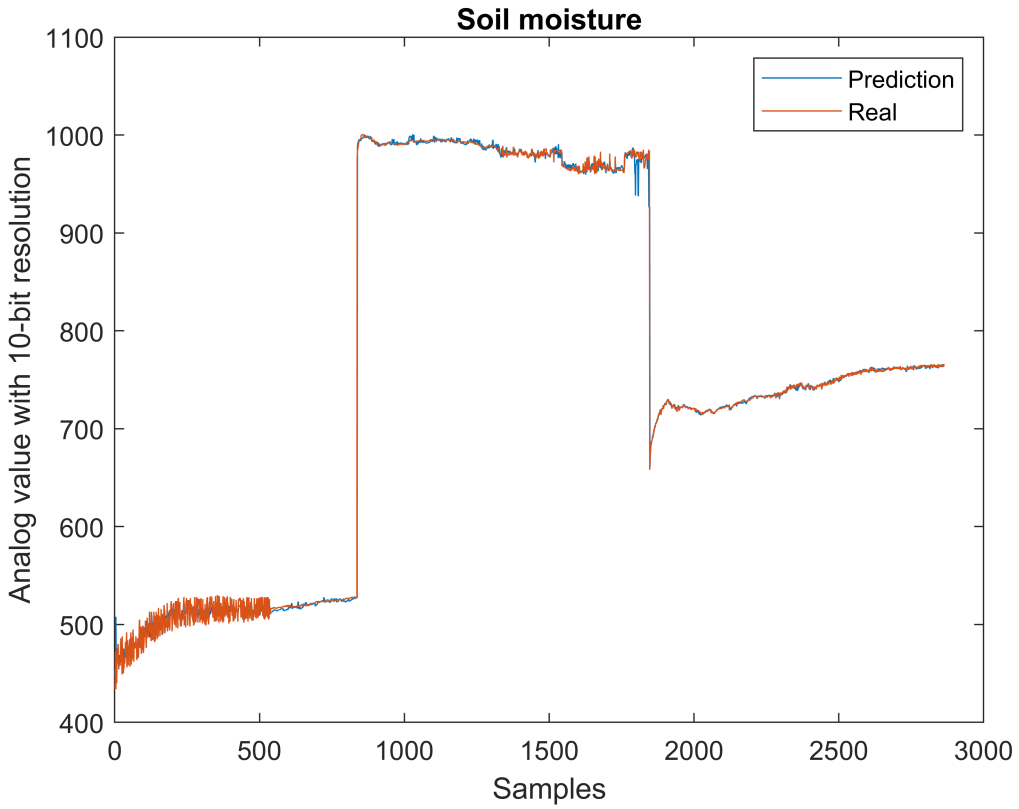
Testing NN as Regression (Bayesian Regularization)

```
yest = myNeuralNetworkFunction_BR(input)
```

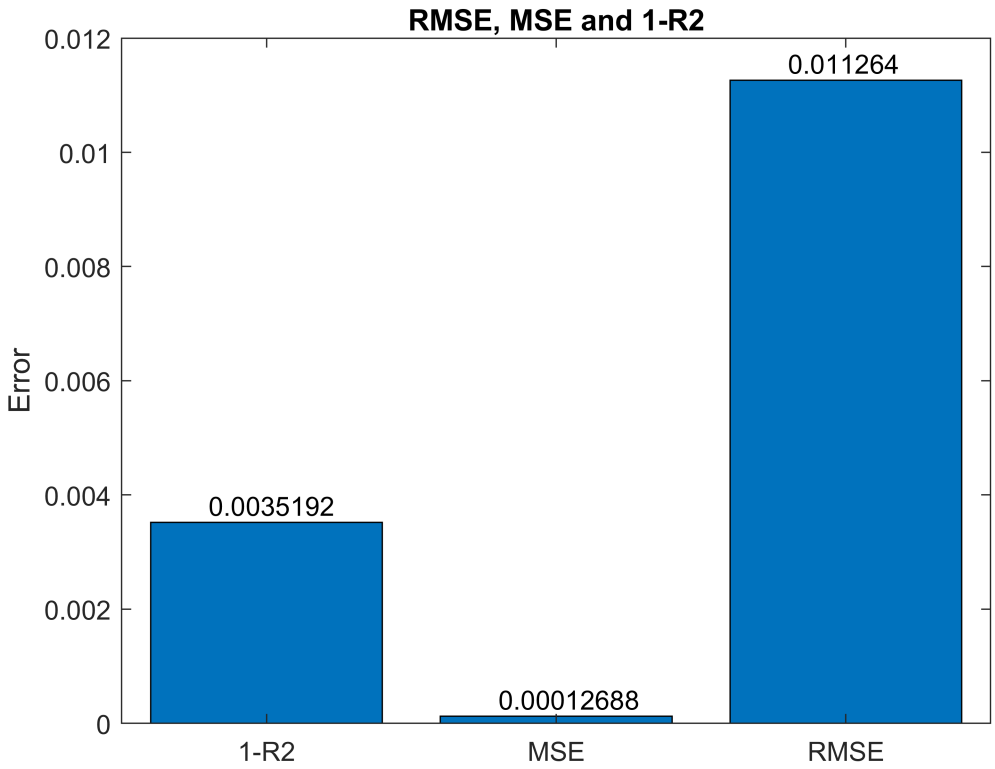
```
yest = 2863×1
```

```
0.4481
0.4544
0.4475
0.5074
0.4640
0.4579
0.4605
0.4649
0.4628
0.4613
  ⋮
```

```
figure
plot(yest*max(Datos(:,4)))
hold on
plot(output*max(Datos(:,4)))
title("Soil moisture");legend("Prediction","Real");
xlabel("Samples");ylabel("Analog value with 10-bit resolution");
```




```
[rmse,mse,r2] = fBar_RmseMseR2(yest,output)
```



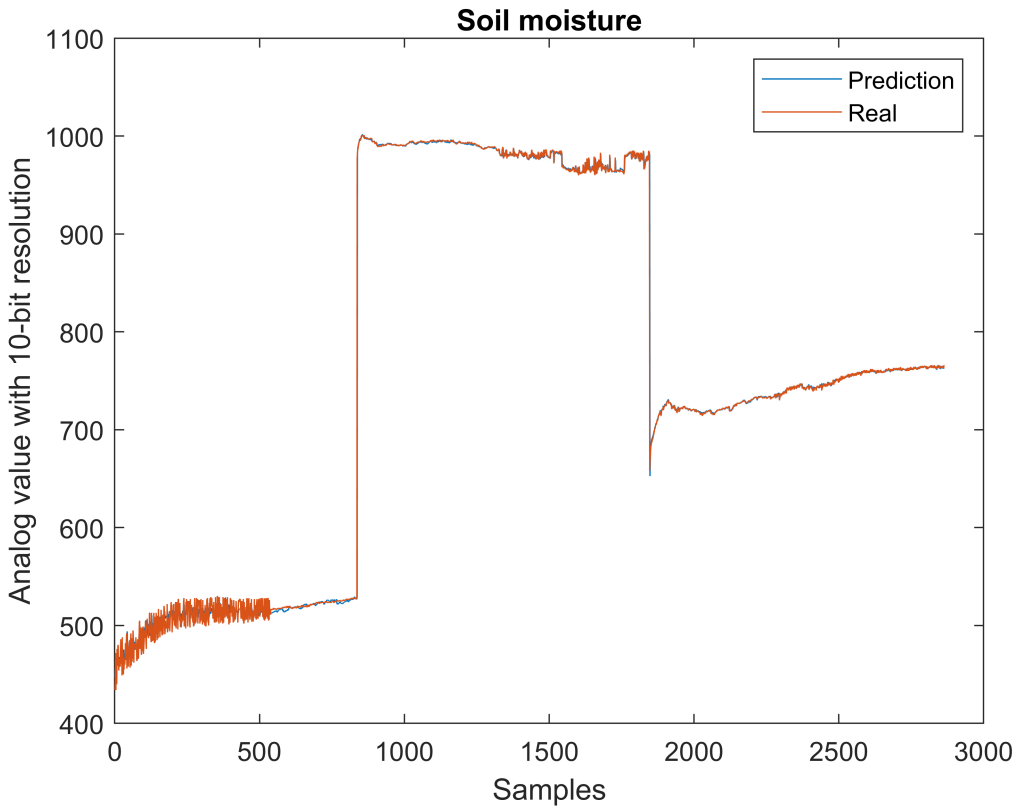

```
rmse = 0.0113
mse = 1.2688e-04
r2 = 0.9965
```

Testing NN as Regression (Levenberg-Marquardt)

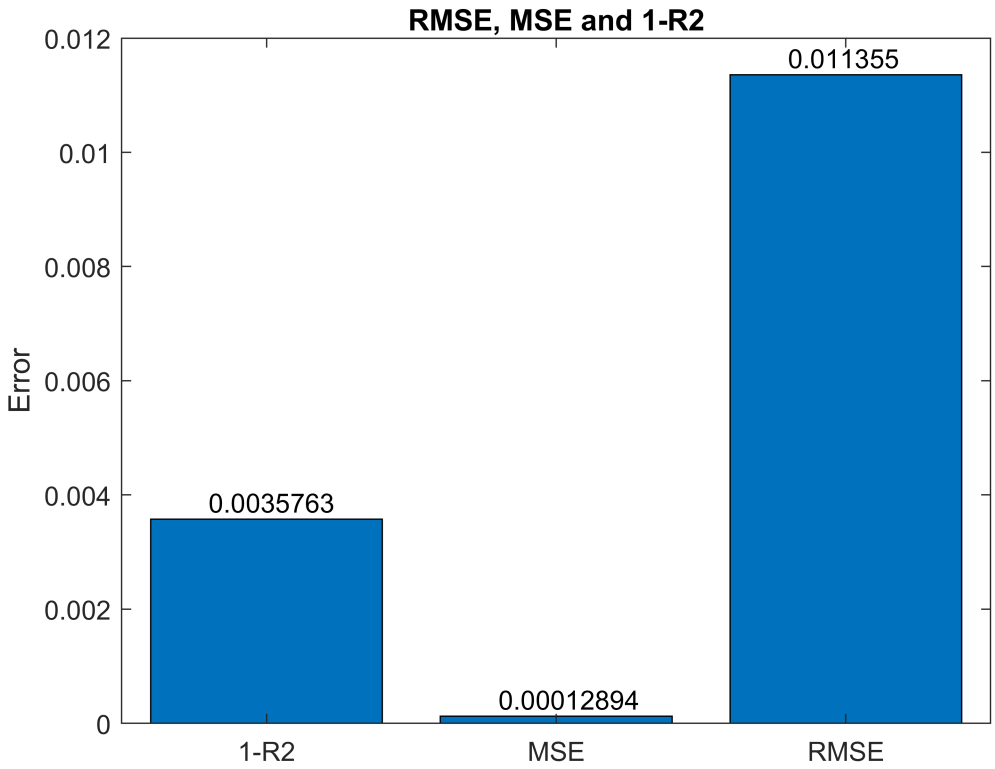
```
yest = myNeuralNetworkFunction_LM(input)
```

```
yest = 2863×1
    0.4472
    0.4561
    0.4571
    0.4466
    0.4623
    0.4558
    0.4581
    0.4651
    0.4585
    0.4601
      ⋮
```

```
figure
plot(yest*max(Datos(:,4)))
hold on
plot(output*max(Datos(:,4)))
title("Soil moisture");legend("Prediction","Real");
xlabel("Samples");ylabel("Analog value with 10-bit resolution");
```




```
[rmse,mse,r2] = fBar_RmseMseR2(yest,output)
```



```
rmse = 0.0114
mse = 1.2894e-04
r2 = 0.9964
```