TEMPERATURE AND SPEED CONTROL LAB (TSC-LAB)

Práctica 5: Activation of Transistor 1 and 2, also Reading of temperature sensor 1 and 2

https://tsc-lab.blogspot.com/2021/05/practica-5-activation-of-transistor-1.html

- Blog: https://tsc-lab.blogspot.com/
- GitHub: https://github.com/vasanza/TSC-Lab
- Matlab functions: https://github.com/vasanza/Matlab_Code
- `IEEEDataPort:` http://ieee-dataport.org/4138
- **`TSC-LAB configurations`**
- *`int period = 15; //medium period in minutes`*
- *`int freq_sampling = 100; // sampling time`*
- *`int ciclos = 20; // sampling time`*

Raw dataset preparation

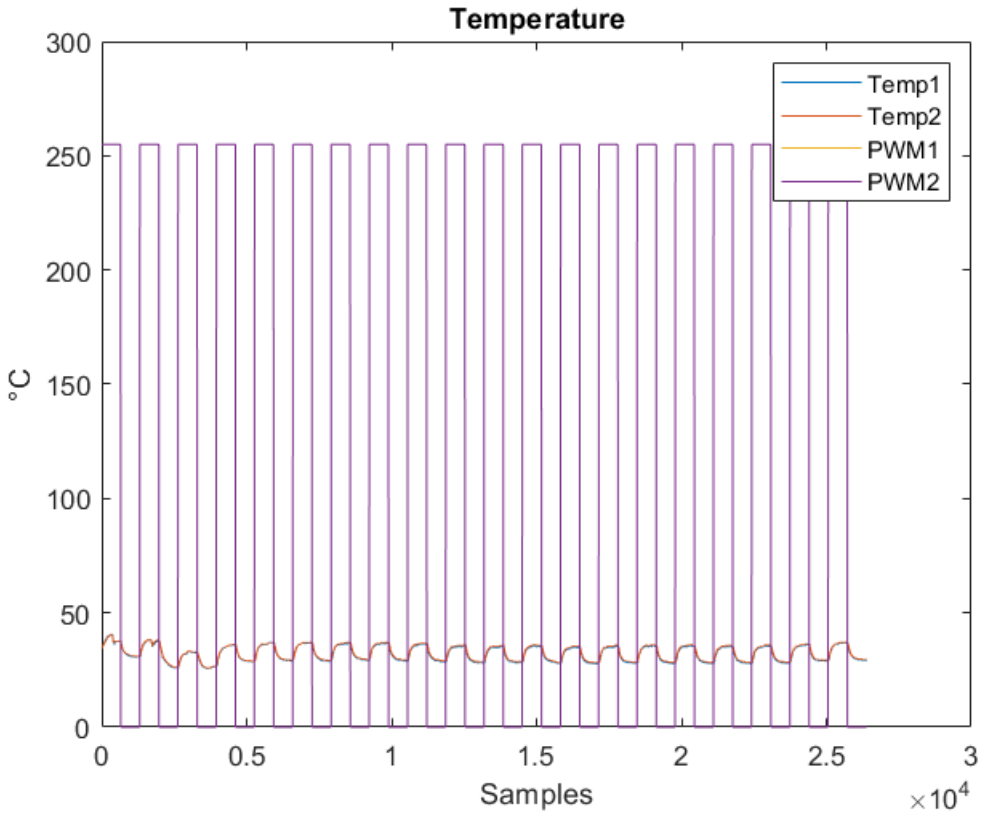
```
clear;clc;%clear all
addpath(genpath('./src'))%functions folders
datapath = fullfile('./data/');%data folder
```

Raw dataset preprocessing

```
filenames = FindCSV(datapath);%List All CSV files
data=readtable(fullfile(datapath,filenames(1).name));%Select i CSV file
data=table2array(data);
DataNorm = fNormalization(data(:,1:2));%Normalization
DataFeatures = [max(DataNorm) min(DataNorm) mean(DataNorm)...
    median(DataNorm) rms(DataNorm) std(DataNorm) ];%Feature extraction
```

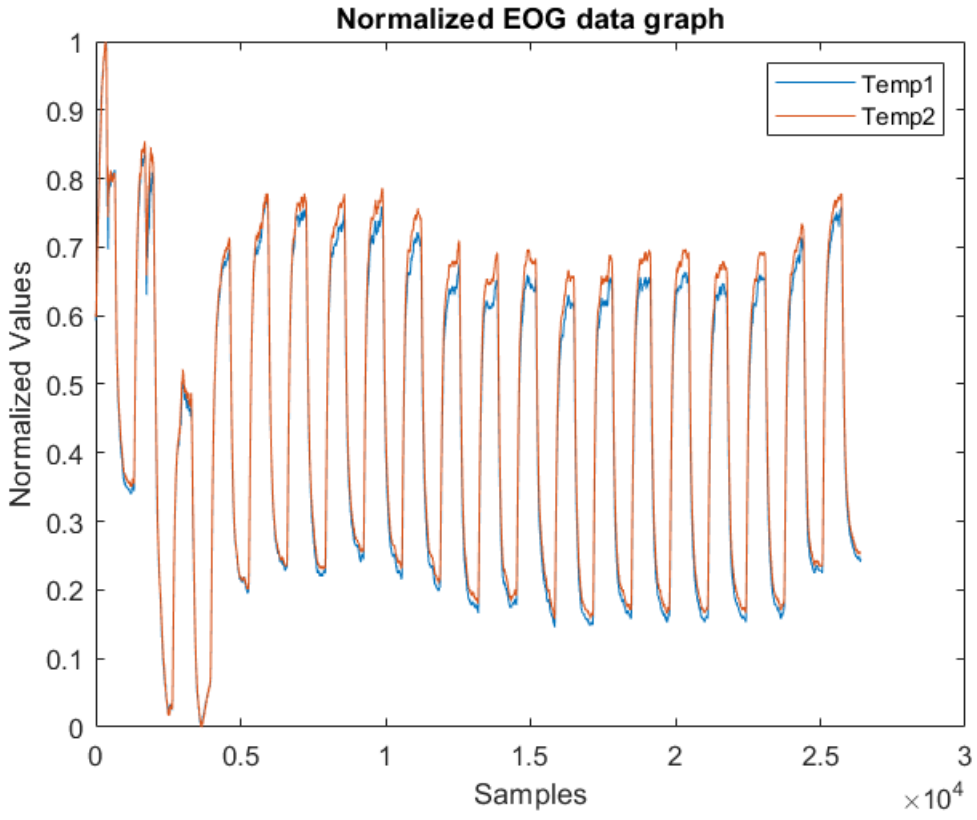
Plot Raw TSC-LAB dataset

```
figure
plot(data);xlabel('Samples');ylabel('°C');
title('Temperature');
legend('Temp1','Temp2','PWM1','PWM2');
```



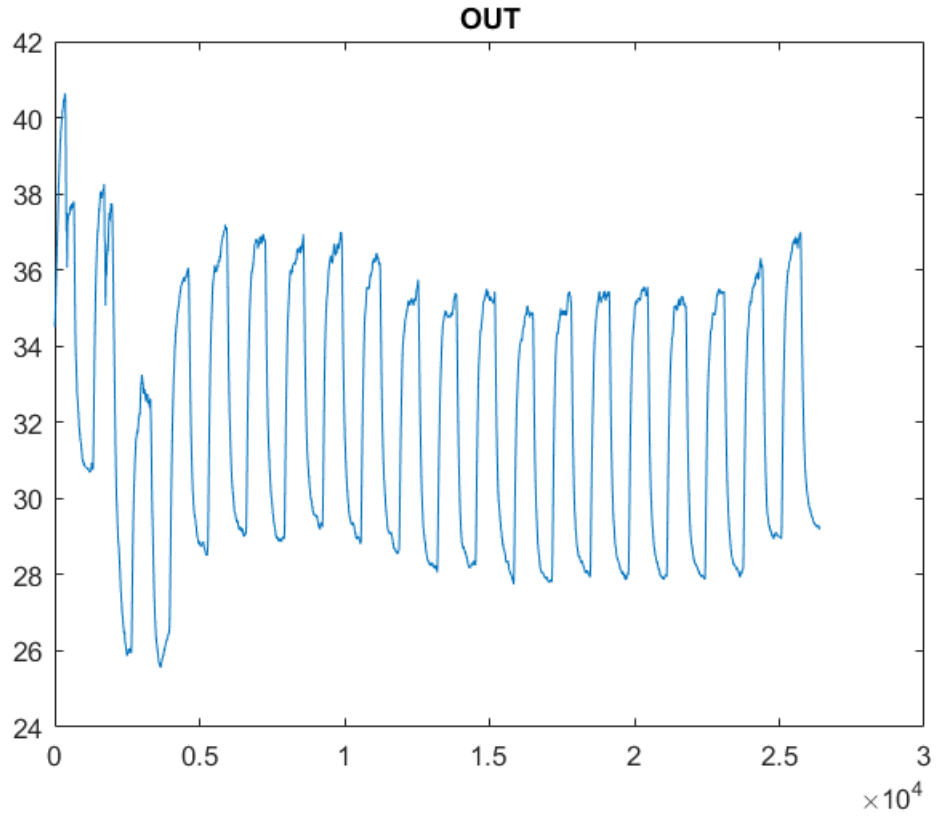
Plot Normalization EOG dataset

```
figure
plot(DataNorm);xlabel('Samples');ylabel('Normalized Values');
title('Normalized EOG data graph');
legend('Temp1','Temp2');
```



Select a case

```
num = input('Enter a case: ');
switch num
    case 1 %Temp1
        IN=data(:,end-1);%temp1
        OUT=data(:,1);%PWM1
case 2 %Temp2
        IN=data(:,end);%temp1
        OUT=data(:,2);%PWM1
    case 3 %Temp1 and Temp2
        IN=[(data(:,end) + data(:,end-1))/2];%temp1
        OUT=data(:,1);%PWM1
end
figure
plot(OUT)
title('OUT');
```

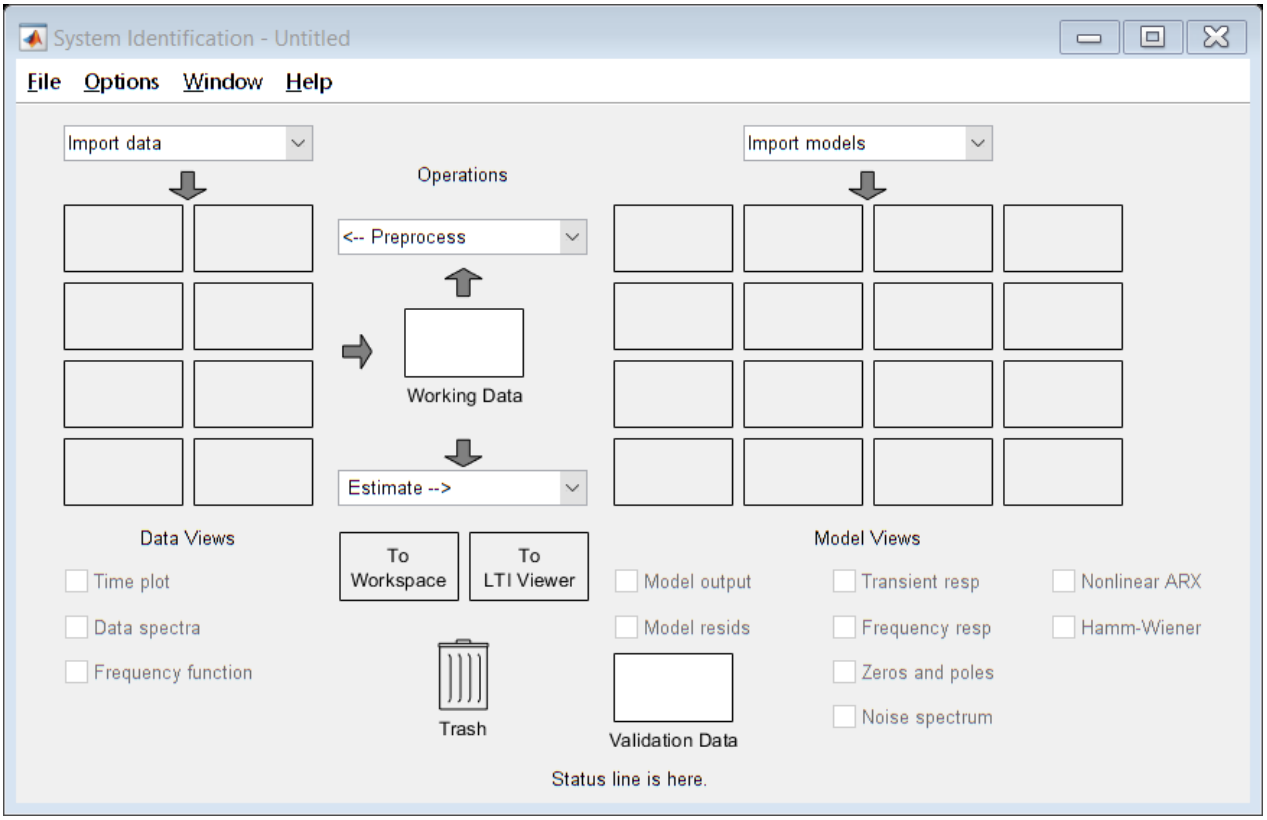


System Identification

```
ident
```

```
Warning: The "ident" command is obsolete and may be removed in a future release of MATLAB. Use the
"systemIdentification" command instead.

Created preference file C:\Users\vasan\Documents\MATLAB\idprefs.mat.
Type HELP MIDPREFS if you want to move this file.
```



Open the Classification Learner

```
%regressionLearner
%classificationLearner
```