Proyecto Final

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Abstract

This paper will present an overview of the final project of the elective Electronics Area I at ECCI University, regarding the training of models for the classification of hostile or difficult to access environments for human personnel. During the training process, certain environments were designed to facilitate the acquisition of data from the sensors used during the development of the project. In this case, a BMP180 barometric pressure sensor was used, which detects both pressure and temperature, and a TCS230 color sensor capable of identifying the RGB color rates in the environment.

Resumen.

En el presente documento se presentará un vistazo al proyecto final de la electiva de Área Electrónica I de la universidad ECCI, con respecto al entrenamiento de modelos de clasificación de ambientes hostiles o de difícil acceso para personal humano. Durante el proceso de entrenamiento, se diseñaron determinados ambientes para facilitar la adquisición de los datos de los sensoores empleados durante el desarrollo del proyecto. En este caso, se empleó un sensor de presión barométrica BMP180, el cual detecta tanto presión como temperatura, y un sensor de color capaz de identificar los porcentajes de color RGB en el ambiente.

Datasets.

The data acquired for training the prediction models selected for the final project will be treated to ensure better results during training. The conclusions will address the problems encountered during data capture.

```
df$env <- as.factor(df$env)
summary(df)
```

```
   freqRed            freqBlue       select._color         temp_C
 Min.   :  0.00   Min.   : 0.00   Length:2329        Length:2329
 1st Qu.:  0.00   1st Qu.: 0.00   Class :character   Class :character
 Median :  0.00   Median : 0.00   Mode  :character   Mode  :character
 Mean   : 29.83   Mean   :25.07
 3rd Qu.: 33.00   3rd Qu.:54.00
 Max.   :125.00   Max.   :84.00
    press              env
 Length:2329        env A:872
 Class :character   env B:746
 Mode  :character   env C:711
```

Data processing.

txt here.

img here

Summary.

txt here.

Knn Model.

txt here.

Prediction and New data testing

txt here.

txt. here

Multinominal logitic regression

txt here.

Prediction and New data testing

txt here

txt here.

Random Forest

txt here

Prediction and New data testing

txt here