TP1: Linear models for binary classification

Part1:

1- Implement the following algorithms :
   - Perceptron learning algorithm.
   - Pocket learning algorithm.
   - Delta rule learning algorithm.

2- Use or create one data set of your choice, having nonlinearly separable data due to noise, then visualize it. Note that $d = 2$ and $y = \{-1, +1\}$.

3- Apply the aforementioned algorithms to your data (for Pocket and delta use $T_{max} = 100$).

4- For each of the algorithms provide the graph of the empirical error evolution.

5- Compare the three algorithms in terms of:
   - Number of iterations.
   - Accuracy.
   - Empirical error evolution.

(Comment your results)

Part 2

- **Make the real Plan diagram**
- **Demonstrate that if the data is L.S then the PLA converges**
- **Find All types of loss function for classification**
- **Geometrically interpret the PLA algorithm**
- **Find all types of activation functions**
- **Find all quantizers for Adaline**
- $\boldsymbol{T_{max}}$ **Discussion for Pocket**