Hands-on sessions on Interactive Learning

Mohamed CHETOUANI

mohamed.chetouani@sorbonne-universite.fr

TP : Introduction to interactive learning

Objectives :
— Develop basic interactive learning algorithms : mixed-initiative
— Compare performances to (i) computer-initiated and (ii) human-initiated

Description :
Interactive learning allows humans to take part of the learning process of agents. In this session, we will focus on methods allowing to train classifier with interactive machine learning. The methods that will be developed in this article [1] : `http://proceedings.mlr.press/v48/suh16.html`. It is not required to reproduce the complexity analysis.

The aim is to develop classifiers for the 1D Threshold task described in figure 1. The objective is to estimate the target threshold $\theta^* \in [0, 1]$. The task is more formerly described in [1]. We will evaluate the number of interactions (e.g., the number of examples) needed to estimate the target threshold θ^*.

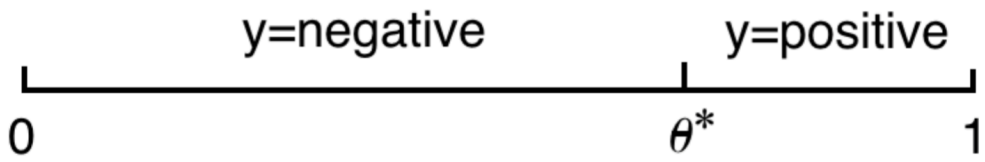

FIGURE 1 – Interactiv Learning : the human is continuously evaluating agent actions and providing feedback

For each of the following approach : (i) computer-initiated, (ii) human-initiated and (iii) mixed-initiative. The methods are described in [1].

1. Describe in few words and/or a pseudo-code the computer-initiated approach
2. Propose an implementation
3. Evaluate the algorithm by fixing a target threshold θ^*. If there is a need, the students could interact in order to play the labeling oracle.

Références

[1] Jina Suh, Xiaojin Zhu, Saleema Amershi ; Proceedings of The 33rd International Conference on Machine Learning, PMLR 48 :2800-2809, 2016.