Trabalho de Grupo:
Aprendizagem Não Supervisionada Incremental

MEI - Sistemas Inteligentes - Ano Lectivo de 2017/2018

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There is an increasing interest in integrating learning capabilities in autonomous agents. Traditionally, machine learning techniques are based on processing a training set (*dataset*) previously constructed. However, in autonomous agents, it makes sense that the learning process extendeds in time, especially since it may be difficult to construct a training set covering all the situations that the agent may eventually find throughout its lifetime.

This work consists in the improvement and extension of a previously developed unsupervised incremental learning system. This system is intended to incrementally discover a set of classes from a stream of examples. The code already developed will be made available with the respective documentation.

For the purpose of testing, demonstration and evaluation, a training set from the object recognition area, such as the Washington RGB-D Dataset, can be used. The system to be developed will learn / discover classes of local shape features of the objects. These local shape classes can then be used to learn the object classes themselves.

A work with similar objectives, although with a totally different approach, is described in the following article:

- M Oliveira, LS Lopes, GH Lim, SH Kasaei, AD Sappa, AM Tomé, "Concurrent Learning of Visual Codebooks and Object Categories in Open-ended Domains", *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems*, Hamburg, Germany, 2015. (em anexo)

This work can be performed by a group of 3 to 5 students.