The use of an Iterative Algorithm for Subtraction of wrong Classifications in order to Detect Shapes and Regions of Interest

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Summary

Classification algorithms are useful on the subject of Occupational Health and Safety. Structured information and the inverse cluster is accumulated and processed with different algorithms in order to detect shapes to find the interaction between them and to define the separated regions. The first method we use is this of support vector machines that is based on supervised learning. Our purpose is the machine learning for data classification. The data are collected either from a database or from the Internet. In this work we are trying to introduce the entity relationship model. At the second method we use the eigenvalues and the eigenvectors in order to detect shapes and points into clusters of data without any previous method of learning. This method is named unsupervised learning. We applied the two algorithms in an iterative and combinational way for the purposes of continuous removal wrong classification from regions of interest. This work contributes to the development and implementation of telemedicine and eHealth Services. It also contributes to the medical imaging as an essential component of diagnosis, medical education and information.

Information is produced in increasing quantities in health care professions. Tasks are initiated for the purposes of presentations, reports and courses. Classification algorithms help us to visualize the content of the information in order to adjust into the presentation results that explain the current state of the information system. Classification algorithms are introduced for supervised and unsupervised learning. Supervised learning is used for automated recognition of some specific regions of interest. An automatic system for specific skin region recognition would constitute a valuable support for physicians in every day clinical practice and should reproduce the perceptual and cognitive strategy followed by doctors. The last years have witnessed numerous studies on this topic; The database stores a set of features containing shape or a set of features with local and global parameters, calculated to describe region of interest, from which significant features are selected by application of statistical feature subset selection methods using a nearest neighbor classification algorithm. In that work we particularly concentrated on the segmentation technique and on the features selection process. Here we focus instead on the classification algorithm, and we propose the use of kernel methods for recognition of skin images. Specifically, we focus our attention on Support Vector Machines (SVM), which achieves recognition results comparable to those obtained by skilled clinicians. The development of the internet has made a large number of online repositories and other available health – related resources. We use these resources for applications of classification and machine learning.

Teledermatology, application of telemedicine is one of the most often applied telemedicine application worldwide. We are trying to connect the eHealth services with the current state at work places so that we can organize some important tasks and support the work of employees. The usage of medical consultations is a very important subject. The services we are going to use are important so that we can have a representation of the content of the data. The visualization of the data is important for the clinicians also for decision making. The SVM method not only helps us to this procedure but also eliminates to some points from the system.

In this paper we are trying to solve the problem of separation between two different data sets. On the other hand we are trying to eliminate the complexity of data using some criteria in order to remove the data from the data set, which are not useful to the definition of the separable regions.

The separation of data into clusters and into two or more data sets is an important procedure. We apply the SVM algorithm iteratively for each cluster to differentiate one cluster from the rest. In this case we construct multiple separation regions between different data clusters.

Separation of one data set into clusters after supervised learning on the data set. Still this separation is based on an iterative way. Our purpose is the wrong classified data not to be added at the procedure of learning. With this principle we simplify the classification system.

Analyzing in more depth this effort for simplification of the system, the removal of wrong classification data could be done only for negative labeled data which are placed on positive labeled
data. We do not define any constraints on the positive labeled data which are placed on negative regions.

Finally if we want to make more strict the constraints of separation between two clusters for positive decisions iterative we also remove and the positive data from negative regions. Our purpose of this use of iterative algorithm is the simplification of some procedures. The transition from the theory to practical level of applications and of implementations is very useful and important in order to achieve some standards and in order to simplify the practical results.