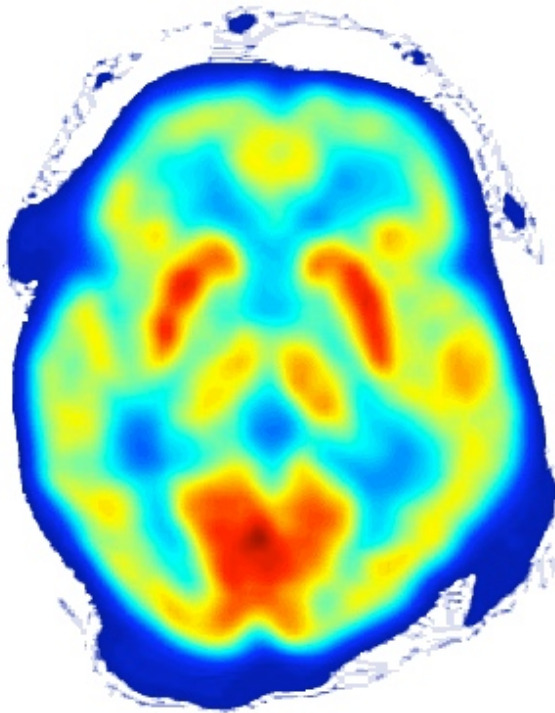


The Group was involved in research to design of machine learning and soft computing based techniques for biological and biomedical data and image analysis:



- analysis of brain and skeletal NMR and TAC images. The careful delineation of the medical objects alone provides relevant clinical information and the extraction of quantitative features is fundamental, once the diagnosis was made, to determine the extent and progression of the disease. The activities concern the development of techniques based on artificial vision and fuzzy pattern recognition of shapes to detect anomalies in magnetic resonance and tomographic images.

- analysis of cardio-vascular eco images. The cardiovascular and cerebrovascular diseases are the major causes of mortality in the population and the complex inner-media (IMT) of the carotid artery can be used to predict cardiovascular events such as myocardial infarction. Since the manual analysis is tiring, does not guarantee reproducibility and does not allow the analysis

of other important statistics, activity concerns the development of a CAD (Computer Aided Diagnosis) based on deformable models to automatically extract the characteristics of the intimate media structure from images of the carotid artery.

- analysis of images in functional genomics. The data of functional genomics, typically images and sequences of images, tend to identify the mechanisms that regulate the activation or deactivation of genes in various experimental conditions, such as outbreaks of diseases or sequences of observations in therapeutic phases. The activities concern the development of CAD based on Bayesian techniques to extract the activation parameters of genes and proteins, addressing issues such as gridding, the segmentation of microarray images, image registration in proteomics and image analysis in biology cellular.