Machine Identification of Biological Shapes

Résumé du projet de recherche (Langue 1)

There is currently no existing methodology in image analysis and computer vision which can be applied to highly deformable shape recognition problems of a high complexity such as cells, organs, leaves or flowers. In fact, the most successful shape recognition algorithms have been developed for rigid or semi-rigid objects, such as faces and cars; moreover, applications involving deformable objects tend to be very specialized, e.g., identifying handwritten digits or pedestrians. Consequently, there is a need for a generic methodology aimed at category-level recognition of deformable shapes, particularly when both the number of categories and the in-category variation is very large. The goal of this thesis is then to develop such a methodology and corresponding computer algorithms for categorizing deformable shapes.