

Part II

Contributions

Part II presents the contributions of this Thesis. This part focuses on presenting our newly developed approaches solving some of the DCA mentioned limitations. The two first Chapters present new data pre-processing modules dedicated to the standard version of the dendritic cell algorithm. These developed modules are based on the theory of rough sets and the theory of fuzzy-rough sets. Secondly, the next two Chapters detail solutions to overcome the DCA limitation as it is sensitive to the input class data order. The proposed algorithms are based on the use of fuzzy set theory, fuzzy clustering techniques and a database maintenance technique. Finally, the last Chapter deals with the development of a more general DCA taking into account all the previously studied parts.