Name of Candidat : Waleed Shaban Mohamed Yamany
Degree M.Sc
Title of Thesis

Near Sets and Applications

Supervisors:
1- Prof. Dr. Kamal Ahmed Dib

2 Prof. Dr. Aboul Ella Hassanien

Approval   19/5/2015   Department   Mathematics

ABSTRACT

This thesis contain a new approaches based on rough set to solve a problem of feature selection. Rough set theory provides a mathematical tool to discover data dependencies and reduce the number of features contained in a dataset by purely structural methods. We applied rough set algorithm based on power set tree for feature selection from twenty features based on shape, color and texture that have been extracted in order to obtain a feature vector for each object to identify the tumor and classify it in 2D brain Magnetic resonance imaging (MRI) images.

In this part we presented feature selection and classification approach, which consists of four main phases (Clustering phase, Feature extraction, Reduct generation, and Classification). A rough set algorithm based on power set tree was applied for feature selection from twenty features based on shape, color, and texture that have been extracted in order to obtain a feature vector for each object to identify the tumor and classify it in 2D brain Magnetic resonance imaging (MRI) images. The experimental results showing a high recognition rate with the proposed scheme.

We proposed a new feature selection technique, where one investigates how flower pollination algorithm hybrid with rough set can be applied to find optimal feature subsets or reducts. The flower search algorithm find optimal regions of the complex search space through the interaction of individuals in the population.

We proposed a hybrid bat with rough set feature selection method to select a smaller number of features and achieving similar or even better classification performance than using all features. We use of four initialization strategies for starting the optimization and studies its effect on bat performance. The used initialization reflects forward and backward feature selection and combination of both.