Abstract

Genetic algorithm based Fuzzy C Mean (GAFCM) technique is used to segment spots of complimentary DNA (c-DNA) microarray images for finding gene expression is proposed in this paper. To evaluate the performance of the algorithm, simulated microarray slides were generated whose actual mean values were known and is used for testing. K-means, Fuzzy C Means (FCM) and the proposed GAFCM algorithm were applied to the simulated images for the separation of the foreground (FG) spot signal information from background (BG) and the results were compared. The strength of the algorithm was tested by evaluating the segmentation matching factor, coefficient of determination, concordance correlation and gene expression values. From the results it is observed that the segmentation ability of GAFCM is better compared to FCM and K-Means algorithms.

References

- Saha, S. and Bandyopadhyay, S., Accepted, (2007), Fuzzy Symmetry Based Real-Coded Genetic Clustering Technique for Automatic Pixel Classification in Remote Sensing
Imagery.  Fundamenta Informaticae.

Index Terms

Computer Science  Artificial Intelligence

Keywords
K-means  FCM  GAFCM  Genetic Algorithm  Segmentation  Gene expression