

Abstract

In developing its use, the data has a rapid development in which the data set has information that can be processed to gain knowledge but most are not fully utilized because of the amount that exceeded the limit. For that we need a way to process data in order to get benefits from data, one through with data mining. In data mining, there is one method often used, that is *clustering*. *Clustering* is an objectst grouping based on similarity between objects. By using *clustering* methods, many problem can be found each pattern of data to be found a certain tendency of data. This thesis implements a *clustering* method, namely K-harmonic means, Cat swarm optimization and the hybrid of K-harmonic means and Cat swarm optimization. In the previous development, K-harmonic means has been proveb to have a reliability to overcome problems of K-means. However, K-harmonic means sometimes find a quick solution that that isn't a good solution. So that, it can be said K-harmonic means faces a bad local optima. Therefore, this thesis use a hybrid of K-harmonic means with cat swarm optimization in order to minimize the achievement of local optima. The test are performed to see the quality of system using f-measure. By measuring the quality of *clustering*, we can see from *objective function* and silhouette coefficient. *Objective function* and number of iterations are used to see a bad or good local optima. Based on testing that has been done, k-harmonic means *clustering* produces results that are not much different than hybrid of k-harmonic means. However it can be seen from *objective function* and number of iterations of hybrid of k-harmonic means and cat swarm optimization that is smaller than k-harmonic means

Keywords: *data mining, clustering, k-harmonic means, cat swarm optimization, hybrid of k-harmonic means and cat swarm optimization, f-measure, objective function, silhouette coeficient*