Aplikasi algoritma metaheuristik basis fuzzy K- modes untuk supplier clustering = Application of metaheuristic based fuzzy K-modes algorithm to supplier clustering / Yuliana Portti

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Abstrak

[ABSTRAK
Penelitian ini mengusulkan tiga algoritma meta-heuristik berbasis Fuzzy K-modes untuk clustering binary data set. Ada tiga metode metaheuristik diterapkan, yaitu Particle Swarm Optimization (PSO), Genetika Algoritma (GA), dan Artificial Bee Colony (ABC). Ketiga algoritma digabungkan dengan algoritma K-modes. Tujuannya adalah untuk memberikan modes awal yang lebih baik untuk K-modes. Jarak antara data ke modes dihitung dengan menggunakan koefisien Jaccard. Koefisien Jaccard diterapkan karena dataset mengandung banyak nilai nol . Dalam rangka untuk melakukan pengelompokan set data real tentang supplier otomotif di Taiwan, algoritma yang diusulkan diverifikasi menggunakan benchmark set data. Hasil penelitian menunjukkan bahwa PSO K-modes dan GA K-modes lebih baik dari ABC K-modes. Selain itu, dari hasil studi kasus, GA K-modes memberikan SSE terkecil dan juga memiliki waktu komputasi lebih cepat dari PSO K-modes dan ABC K-modes.
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ABSTRACT
This study proposed three meta-heuristic based fuzzy K-modes algorithms for clustering binary dataset. There are three meta-heuristic methods applied, namely Particle Swarm Optimization (PSO) algorithm, Genetic Algorithm (GA) algorithm, and Artificial Bee Colony (ABC) algorithm. These three algorithms are combined with k-modes algorithm. Their aim is to give better initial modes for the k-modes. Herein, the similarity between two instances is calculated using jaccard coefficient. The Jaccard coefficient is applied since the dataset contains many zero values. In order to cluster a real data set about automobile suppliers in Taiwan, the proposed algorithms are verified using benchmark data set. The experiments results show that PSO K-modes and GA K-modes is better than ABC K-modes. Moreover, from case study results, GA fuzzy K-modes gives the smallest SSE and also has faster computational time than PSO fuzzy K-modes and ABC fuzzy K-modes., This study proposed three meta-heuristic based fuzzy K-modes algorithms for clustering binary dataset. There are three meta-heuristic methods applied, namely Particle Swarm Optimization (PSO) algorithm, Genetic Algorithm (GA) algorithm, and Artificial Bee Colony (ABC) algorithm. These three algorithms are combined with k-modes algorithm. Their aim is to give better initial modes for the k-modes. Herein, the similarity between two instances is calculated using jaccard coefficient.

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