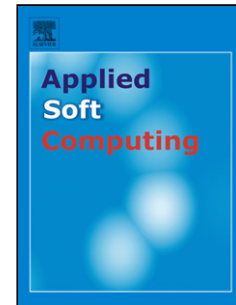


## Accepted Manuscript

Title: A novel hybridization strategy for krill herd algorithm applied to clustering techniques

Author: Laith Mohammad Abualigah Ahamad Tajudin  
Khader Mohammed Azmi Al-Betar Amir Hossein Gandomi



PII: S1568-4946(17)30407-6  
DOI: <http://dx.doi.org/doi:10.1016/j.asoc.2017.06.059>  
Reference: ASOC 4333

To appear in: *Applied Soft Computing*

Received date: 23-12-2016  
Revised date: 2-6-2017  
Accepted date: 30-6-2017

Please cite this article as: Laith Mohammad Abualigah, Ahamad Tajudin Khader, Mohammed Azmi Al-Betar, Amir Hossein Gandomi, A novel hybridization strategy for krill herd algorithm applied to clustering techniques, *Applied Soft Computing Journal* (2017), <http://dx.doi.org/10.1016/j.asoc.2017.06.059>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

## A novel hybridization strategy for krill herd algorithm applied to clustering techniques

Laith Mohammad Abualigah<sup>a,\*</sup>, Ahamad Tajudin Khader<sup>a</sup>, Mohammed Azmi Al-Betar<sup>b</sup>, Amir Hossein Gandomi<sup>c</sup>

<sup>a</sup>*School of Computer Sciences, Universiti Sains Malaysia, 11800 Pinang, Malaysia*

<sup>b</sup>*Department of Information Technology, Al-Huson University College, Al-Balqa Applied University, P.O. Box 50, Al-Huson, Irbid, Jordan*

<sup>c</sup>*School of Business, Stevens Institute of Technology, Hoboken, NJ 07030, USA*

---

### Abstract

Krill herd (KH) is a stochastic nature-inspired optimization algorithm that has been successfully used to solve numerous complex optimization problems. This paper proposed a novel hybrid of KH algorithm with harmony search (HS) algorithm, namely, H-KHA, to improve the global (diversification) search ability. The enhancement includes adding global search operator (Improvise a new solution) of the HS algorithm to the KH algorithm for improving the exploration search ability by a new probability factor, namely, Distance factor, thereby moving krill individuals toward the best global solution. The effectiveness of the proposed H-KHA is tested on seven standard datasets from the UCI Machine Learning Repository that are commonly used in the domain of data clustering, also six common text datasets that are used in the domain of text document clustering. The experiments reveal that the proposed hybrid KHA with HS algorithm (H-KHA) enhanced the results in terms of accurate clusters and high convergence rate. Mostly, the performance of H-KHA is superior or at least highly competitive with the original KH algorithm, well-known clustering techniques and other comparative optimization algorithms.

*Keywords:* Krill herd algorithm, Hybridization, Global exploration, Data clustering, Text clustering

---

\*Corresponding author. Tel.: +60123053158

*Email address:* [lmqa15\\_com072@student.usm.my](mailto:lmqa15_com072@student.usm.my) (Laith Mohammad Abualigah)

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات