

Accepted Manuscript

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PII: S1877-7503(16)30271-X
DOI: <http://dx.doi.org/doi:10.1016/j.jocs.2016.10.016>
Reference: JOCS 566

To appear in:

Received date: 26-7-2016
Revised date: 29-9-2016
Accepted date: 27-10-2016

Please cite this article as: Le Nguyen Bao, Dac-Nhuong Le, Gia Nhu Nguyen, Vikrant Bhateja, Suresh Chandra Satapathy, Optimizing Feature Selection in Video-based Recognition using Max-Min Ant System for the Online Video Contextual Advertisement User-Oriented System, <![CDATA[*Journal of Computational Science*]]> (2016), <http://dx.doi.org/10.1016/j.jocs.2016.10.016>

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Optimizing Feature Selection in Video-based Recognition using Max-Min Ant System for the Online Video Contextual Advertisement User-Oriented System

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Abstract

The online-advertising has been grown to focus on multimedia interactive model with through the Internet. Our *Online Video Advertisement User-oriented* (OVAU) system combined the machine learning model for face recognition from camera, multimedia streaming protocols, and video meta-data storage technology. *Face Recognition* (FR) is an importance phase which can to enhance the performance of our system. *Feature Selection* (FS) problem for FR is solved by MMAS-FS algorithms based-on PZMI and DWT features. The features set are represented by digraph $G(E, V)$. Each node used to show the features, and the ability to choose a combination of features is presented the edges connecting between two adjacent nodes. The heuristic information extracted from the selected feature vector as ant's pheromone. The feature subset optimal is selected by the shortest length features and best presentation of classifier. The best subset used to classify the face recognition used *Nearest Neighbor Classifier* (NNC). The experiments were analyzed on FS shows that our algorithm can be easily applied without the priori information of features. The execution assessed of our calculation is more effective than previous approaches for Video-based recognition based on FS problem.

Keywords: Contextual Advertising, Face Recognition (FR), Feature selection (FS), DWT, PZMI, Video-based face recognition (VbFR), Nearest Neighbor Classifier (NNC), Max-Min Ant System (MMAS).

1. Introduction

The online-advertising has been grown to focus on multimedia interactive model with through the Internet, such as: *Google AdWords*, *Google AdSense*.... The OVAU system generate the content of advertising relevant, truly, and useful to customs in each explicit context over the object detected and recognized from the camera. The three phases of OVAUS system presented in Fig.1 [1]. In the first phase, the objects have been identified and classify directly from the camera to get the features and characteristics. In the second phase, we can access videos based the objects classified using video meta-data storage technology. Finally, the content of advertising videos suitable will be transfer to customs by multimedia streaming protocols, such as: *RTP*, *RTP/RTCP*. The media stream is sent as chunks of data, put into RTP/RTCP packets [56]. Our aiming is detect face of objects extracted from the

video camera after we removed unwanted elements. There are two steps of face recognition process: (i) face detection and (ii) objects identifier automatically. The keys of face recognition is the distinguishing extraction methods from objects of images and performed standard for identification automatically [1].

The paper proposed a novel MMAS algorithm solve *Race Recognition* (FR) problem used *Feature Selection* (FS). Ant's pheromone presents the heuristic information of the selected feature vector extracted. The feature subset optimal is selected by the shortest length classification represented. This article is presented with the structure: Section 2 introduces the related works of FS approaches for FR. Section 3 presents FS approaches for video used FS framework and section 4 implemented our MMAS-FS algorithms. The experiments was analyzed and evaluated performance on FR presents in section 5. Our conclusion and some approaches in the future mentioned in section 6.

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