Design and Implementation an Automated System for Analyzing Brushstrokes to Distinguish between Van Gogh and his Contemporaries by using Swarm Intelligent Method

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Abstract

In this paper, An Automated System for Distinguish Between Van Gogh and his Contemporaries by using Swarm Intelligent is designed. Swarm intelligence can be defined as the collective intelligence that emerges from a group of simple entities; these agents enter into interactions, sense and change their environment locally.

A system for Distinguish Between Van Gogh painting and his Contemporaries consists of three steps : processing step (In processing step, the digital paintings for Van Gogh and his contemporaries are processed automatically through many steps (Edge detection(Canny Edge detection and Ant colony optimization method), Edge linking (Hough transform method), Extract all the connected components from the image, Thinning and Resize image), feature extraction step based on histogram of oriented gradients (HOG) , and recognition step using Artificial Fish Swarm Algorithm .

An Automated System for Distinguish Between Van Gogh and his Contemporaries by using
Swarm Intelligent have been tested, and the recognized rate is 94.51%.

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**Index Terms**

Computer Science Algorithms
Keywords

Swarm intelligence, feature extraction, Canny Edge detection method, Ant colony optimization method (ACO), Hough transform, Histogram of Oriented Gradients (HOG), Artificial Fish Swarm Algorithm.