Abstract

This paper reports research into representing edge detectors, with the help of swarm intelligence [1]. Other gradient-based detectors may not produce the same edge pixels if applied onto the same image. Hence, the need of an edge detector arises, which is precise in detecting edges in majority of the common types of edges. The idea behind Swarm intelligence arises from the insects, bird flocks, fish schools, and wildebeest herds etc. They all have some common features, they move in groups which are having a special behavior. Their coordination is so good and it observed that as some centralized controller dictates all movement. With this background, swarm intelligence relates with ants which may not be very clever individually, but ant colonies are capable of searching, making plans, and optimizing routes to food. Ant colonies are so good at finding the shortest path from one location to another, that an algorithm was developed based on their behavior called as Ant Colony Optimization. Keeping this idea in mind the paper extends previous work of an ant algorithm which is used for edge detection of gray image. Here, ACO is applied for feature extraction and edge pattern detection of a color image. An adaptive threshold histogram method is introduced to the ACO. An image is distributed separately as a combination of three primary colors Red(R), Green (G) and Blue (B). Based on these color intensities three separate histograms are generated and their average mean value is computed which is the threshold value. Thus, a threshold value is generated
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dynamically every time.

References

- Chittka, L. , & Muller, H. , "Learning, specialization, efficiency and task allocation in social insects"; Communicative and Integrative Biology, 2 (2), 151–154.
- P. Xiao, J. Li, and J. -P. Li, "An improved ant colony optimization algorithm for image extracting"; in Apperceiving Computing and Intelligence Analysis (ICACIA), 2010
Index Terms

Computer Science  Image Processing

Keywords

Adaptive Threshold  Ant Colony Optimization  Histogram.