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BHARADWAJ R EMBAR
G DEVI SHREE
J SRINIVAS ANANT
SHALINI KESHRI

ABSTRACT

Image registration is the process of overlaying images (two or more) of the same scene taken at different times, from different viewpoints, and/or by different sensors. The registration geometrically aligns two images (the reference and sensed images). At present, there are many approaches to solving this task, many of which are quite universal. The reviewed approaches are classified according to their nature (intensity-based and feature-based). Intensity-based methods compare intensity patterns in images via correlation metrics. Intensity-based methods register entire images or sub-images. If sub-images are registered, centers of corresponding sub images are treated as corresponding feature points.

In a genetic algorithm, a population of candidate solutions to an optimization problem is evolved toward better solutions. Each candidate solution has a set of properties which can be mutated and altered; traditionally, solutions are represented in binary as strings of 0s and 1s, but other encodings are also possible. The evolution usually starts from a population of randomly generated individuals, and is an iterative process, with the population in each iteration called a generation. In each generation, the fitness of every individual in the population is evaluated; the fitness is usually the value of the objective function in the optimization problem being solved. Focus of this project is to use genetic algorithm and try to align two images and check the similarity/dissimilarity between them by using normalized mutual information as a correlation metric which we obtain by calculating histogram and entropy of two images and try to maximize the mutual information through which the chances of image registration increase drastically.