Face authentication using speed fractal technique

Andrea F. Abate, Riccardo Distasi, Michele Nappi *, Daniel Riccio
Dipartimento di Matematica e Informatica, Universita` di Salerno, 84084 Fisciano, SA, Italy

Abstract

In this paper, a new fractal based recognition method, Face Authentication using Speed Fractal Technique (FAST), is presented. The main contribution is the good compromise between memory requirements, execution time and recognition ratio. FAST is based on Iterated Function Systems (IFS) theory, largely studied in still image compression and indexing, but not yet widely used for face recognition. Indeed, Fractals are well known to be invariant to a large set of global transformations. FAST is robust with respect to meaningful variations in facial expression and to the small changes of illumination and pose. Another advantage of the FAST strategy consists in the speed up that it introduces. The typical slowness of fractal image compression is avoided by exploiting only the indexing phase, which requires time O(D log (D)), where D is the size of the domain pool. Lastly, the FAST algorithm compares well to a large set of other recognition methods, as underlined in the experimental results.