

# Abstract

**Khaled Mahar**

## **Fractal Image Compression by A Fast Nearest Neighbor Search with an Annular Constraint,**

the encoding step in fractal image compression is a computationally intensive operation. a large number of sequential searches through a list of domain blocks are carried out while trying to find the best match for a range block. the design of efficient search strategies has consequently been one of the most active areas of research in fractal coding, resulting in a wide variety of solutions. in this paper a review of these techniques is presented, then a new algorithm is introduced to reduce the search complexity. when searching for the best domain block for a given range block, an initial guess at the best domain block provides the starting point. then by invoking triangle inequality, the distance between the current best domain block and the range block constraints the search to domain blocks within an annular area about the origin. the proposed algorithm is implemented and applied to a number of test images, showing significant speedup over similar methods.