Abstract

This paper proposes a memetic algorithm (MA) to solve linear systems of equations, by transforming the linear system of equations into an optimization problem. Such exploitation of knowledge obtained in a local search/optimization allows the evolutionary programming implementation to produce very good results at a relatively low computational cost. The proposed MA is able to determine solutions of a given linear system of equations, even in cases where traditional methods fail (determinant null, ill-conditioned systems, subdeterminate systems, supradeterminate systems, system doesn’t satisfy the convergence conditions etc). In situations when a linear system of equations has multiple solutions, in proposed approach, the task is to find as many solutions as possible, inside of a given interval. In cases where no accurate solution for a linear system of equations exists, an approximate solution can be acceptable and it can be obtained by the proposed method.

References

Solving Linear Systems of Equations using a Memetic Algorithm


Index Terms

Computer Science

Algorithms

Keywords

linear systems of equations memetic algorithms