Tutorial:

“Introduction to Evolutionary Computation”

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To introduce those attending the tutorial to the basic ideas behind evolutionary computation through Genetic Algorithms. Their main advantages, their limitations, their field of applicability.

Outline:

What is Evolutionary computation.
What are Genetic Algorithms. Their essential characteristics.
   Operators:
      a) Selection
      b) Crossover
      c) Mutation
Theoretical support.
   a) Schemas
   b) The Schema Theorem
   c) Game’s Theoretical Considerations
   d) Markov chain models
   e) Statistical verification
Applications (Cases of study)
   a) Linear Optimization
   b) Linear optimization with constraints
   c) Linear optimization with opposing inequalities
   d) Simultaneous linear equations
   e) Simultaneous non-linear equations
   f) Optimization of a production line
   g) Traveling salesman problem

Background knowledge: Participants should be familiar with basic probability concepts, at least one programming language and be fluent with binary representation

Maximum number of participants: Number of participants restricted to 30

Hands-on activities:

Participants will be required to install and use a software where all the applications mentioned above will be tested. The software has been specifically written for this tutorial by the author. It has been developed for a Windows environment and will be installed directly from the installation diskettes.

Material to be given to tutorial attendees:

Technical papers describing the contents of the tutorial.
Audio-visual requirements: Data show or equivalent
Technical requirements: one computer per person