Rochester Joint Chapter of the IEEE Computer and Computational Intelligence Societies

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presents

Genetic Algorithms II – More Interesting Variations and Applications

by

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Date: Monday, December 8, 2014
Time: 6:00 p.m. to 8:00 p.m.

- 6:00 p.m.: Pizza/Networking
- 6:30 p.m.: Demonstation of Octave software package, freeware that is comparable to MATLAB
- 7:00 p.m.: Presentation

Location: RIT Campus, Golisano Hall (Building 70), Room 3000
Computer Society announcements and venue information:
http://ewh.ieee.org/r1/rochester/computer
Cost: Free. Open to IEEE members and non-members.

Abstract

Genetic Algorithms (GAs) are among a growing body of problem solving techniques inspired by natural systems, biological, sociological, chemical, physical, etc. GAs are based on the evolutionary idea of survival of the fittest and are implemented as algorithmic problem solving by selective breeding. A GA uses a population of dozens or hundreds of proposed solutions to a problem and repeatedly creates new solutions (children) from pieces of the relatively better individuals (parents), injecting a small amount of error (mutation) into the new individuals. Surprisingly, this often works.

These algorithms can often be very effective to find maxima of continuous functions in cases where calculus cannot easily be applied, and also to quickly find acceptable sub-optimal solutions to difficult (i.e., NP complete) combinatorial problems such as scheduling, bin packing, traveling salesperson, map coloring, etc.

This second of two talks covers more interesting variations and applications. We give special attention to permutation-based problem solutions and how to perform crossovers on permutations.

(**The first of the two talks**, scheduled for the previous week, gave an introduction to the basic algorithm along with variations and tuning parameters and surveyed some applications. In this portion, solutions to problems were represented by bit strings, a familiar object that is easy to create randomly, crossover (sexual reproduction) and mutate.)

Speaker's Biography

Peter was a member of the Computer Science faculty at RIT for 25 years, concentrating on graduate education, CS Theory, Neural Networks, Pattern Recognition, and GAs . He continues to actively advise Graduate CS students, pursue research in Fibonacci Numbers, and march with the Pittsford Fire Department Band.