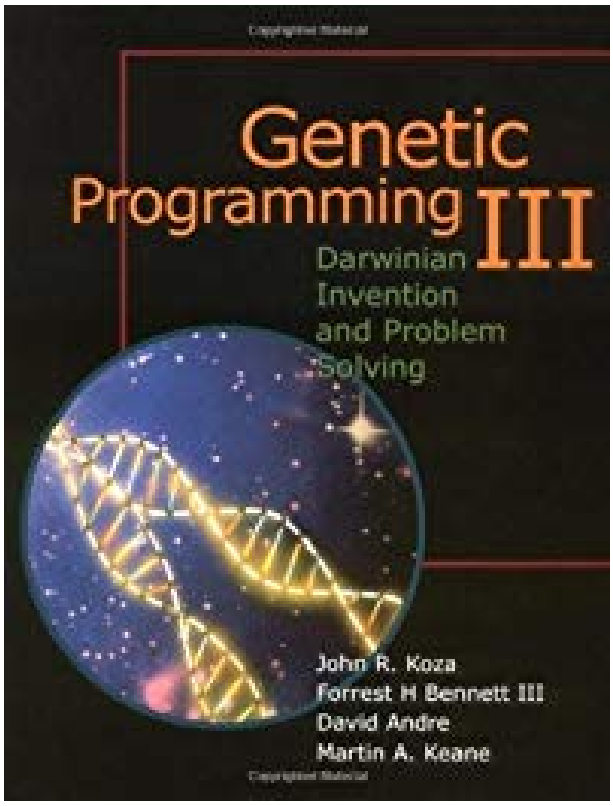
Genetic Programming III: Darwinian Invention and Problem Solving (Vol 3)



Pages:	1154
Published:	May 14th 1999 by Morgan Kaufmann
Genre:	Computer Science
Author:	John R. Koza
ISBN13:	9781558605435
ISBN10:	1558605436
Goodreads Rating:	4.00
Language	English

Genetic programming is a method for getting a computer to solve a problem by telling it what needs to be done instead of how to do it. Koza, Bennett, Andre, and Keane present genetically evolved solutions to dozens of problems of design, optimal control, classification, system identification, function learning, and computational molecular biology. Among the solutions are 14 results competitive with human-produced results, including 10 rediscoveries of previously patented inventions. Researchers in artificial intelligence, machine learning, evolutionary computation, and genetic algorithms will find this an essential reference to the most recent and most important results in the rapidly growing field of genetic programming. * Explains how the success of genetic programming arises from seven fundamental differences distinguishing it from conventional approaches to artificial intelligence and machine learning * Describes how genetic programming uses architecture-altering operations to make on-the-fly decisions on whether to use subroutines, loops, recursions, and memory * Demonstrates that genetic programming possesses 16 attributes that can reasonably be expected of a system for automatically creating computer programs * Presents the general-purpose Genetic Programming Problem Solver * Focuses on the previously unsolved problem of analog circuit synthesis, presenting genetically evolved filters, amplifiers, computational circuits, a robot controller circuit, source identification circuits, a temperature-measuring circuit, a voltage reference circuit, and more * Introduces evolvable hardware in the form of field-programmable gate arrays * Includes anintroduction to genetic programming for the uninitiated