

**Additional Exercises for Chapter 6 of the book: Coello
Coello, Carlos A.; Van Veldhuizen, David A. & Lamont,
Gary B. “Evolutionary Algorithms for Solving
Multi-Objective Problems”, Kluwer Academic
Publishers, New York, ISBN 0-3064-6762-3, May 2002.**

Exercises

1. Luke and Patnaik [5] proposed the use of lexicographic ordering (see Chapter 1) to control bloat in genetic programming. In this proposal, fitness is treated as the main objective, and tree size as a secondary objective. Analyze this proposal and compare it to other research in which multiobjective concepts have been used to control bloat (see for example [2, 3, 1]). Do you see any limitations in using lexicographic ordering to control bloat? Do you think that multiobjective optimization concepts are properly applied by the authors? Discuss.
2. Thomson and Arslan [7] proposed a multi-objective evolutionary algorithm (MOEA) to optimize FIR filter designs. Given the characteristics of this problem, what type of MOEA would be more appropriate to use? Discuss the importance of incorporating user's preferences (see Chapter 9) into the MOEA used to solve this problem. Compare this approach to other related proposals (see for example [4, 8]).
3. Pullan [6] proposed an MOEA with special genetic operators to maximize average network survivability, while minimizing its variability. Analyze the MOEA proposed and discuss possible improvements. Would you consider important the use of a parallel MOEA in this application?

References

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