INF3490/INF4490 Exercises - Week 3

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$\mathbb{P}$ marks the programming exercises, we strongly recommend using the python programming language for these. Exercises may be added/changed after publishing.

1 Pareto Optimality

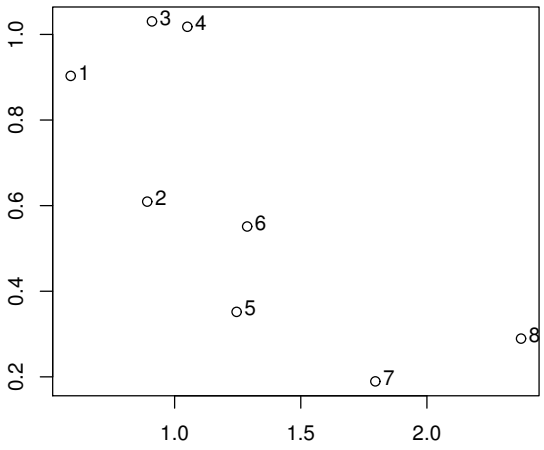

Figure 1: a

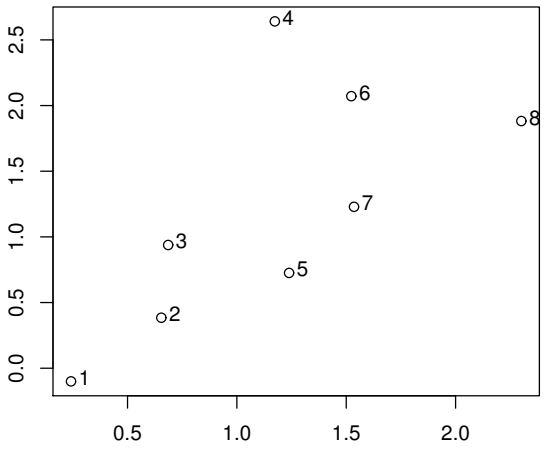

Figure 2: b

For figure a and b above, find the Pareto optimal set when

- Minimizing both f_1 and f_2
- Minimizing f_1, maximizing f_2
- Maximizing f_1, minimizing f_2
- Maximizing both f_1 and f_2

2 Weighted sum

In figures a and b, what would be the maximum point when using weighted sum:

- $w_1 = 1$, $w_2 = 1$
- $w_1 = -1$, $w_2 = 1$

3 Hybrid Algorithm

Why can hybrid algorithms make it harder to maintain diversity?

4 Measuring algorithm performance

Why is it usually better to use the number of fitness function evaluations as a time measure, rather than the number of generations, or the amount of CPU time spent?

Corrections and suggestions

Corrections of grammar, language, notation or suggestions for improving these exercises are appreciated. E-mail me at: **olehelg@uio.no** or use **GitHub** to submit an issue or create a pull request.