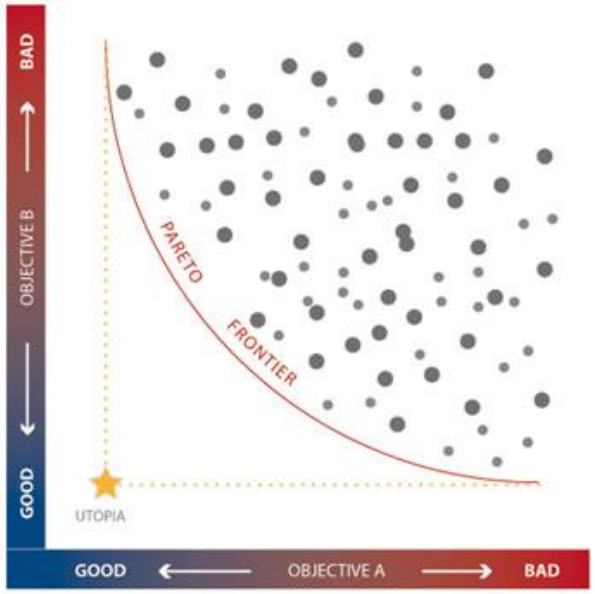

Multi-Objective Evolutionary Optimization (TP)

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Step 1: Weighted Fitness Function

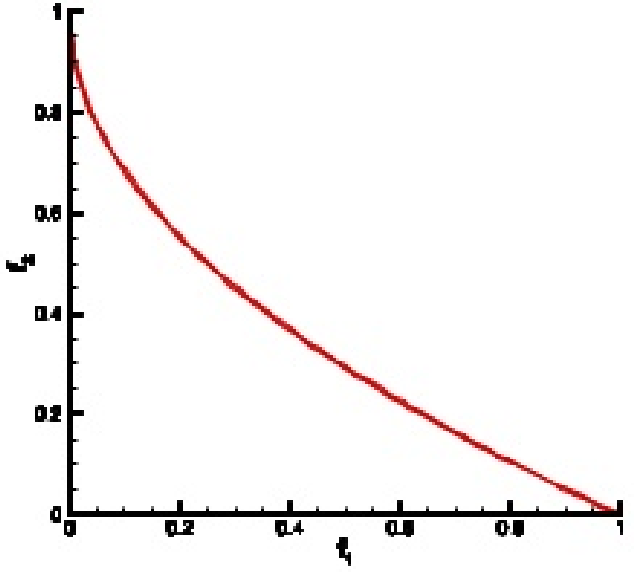
- We try to optimize a function called ZDT1

Minimize: $f_1(x) = x_1$

Minimize: $f_2(x) = \left[1 - \sqrt{\frac{x_1}{g(x)}}\right]$

$$g(x) = 1 + 9\left(\frac{\sum_{i=2}^{n} x_i}{n-1}\right)$$

$$0 \le x_i \le 1,$$



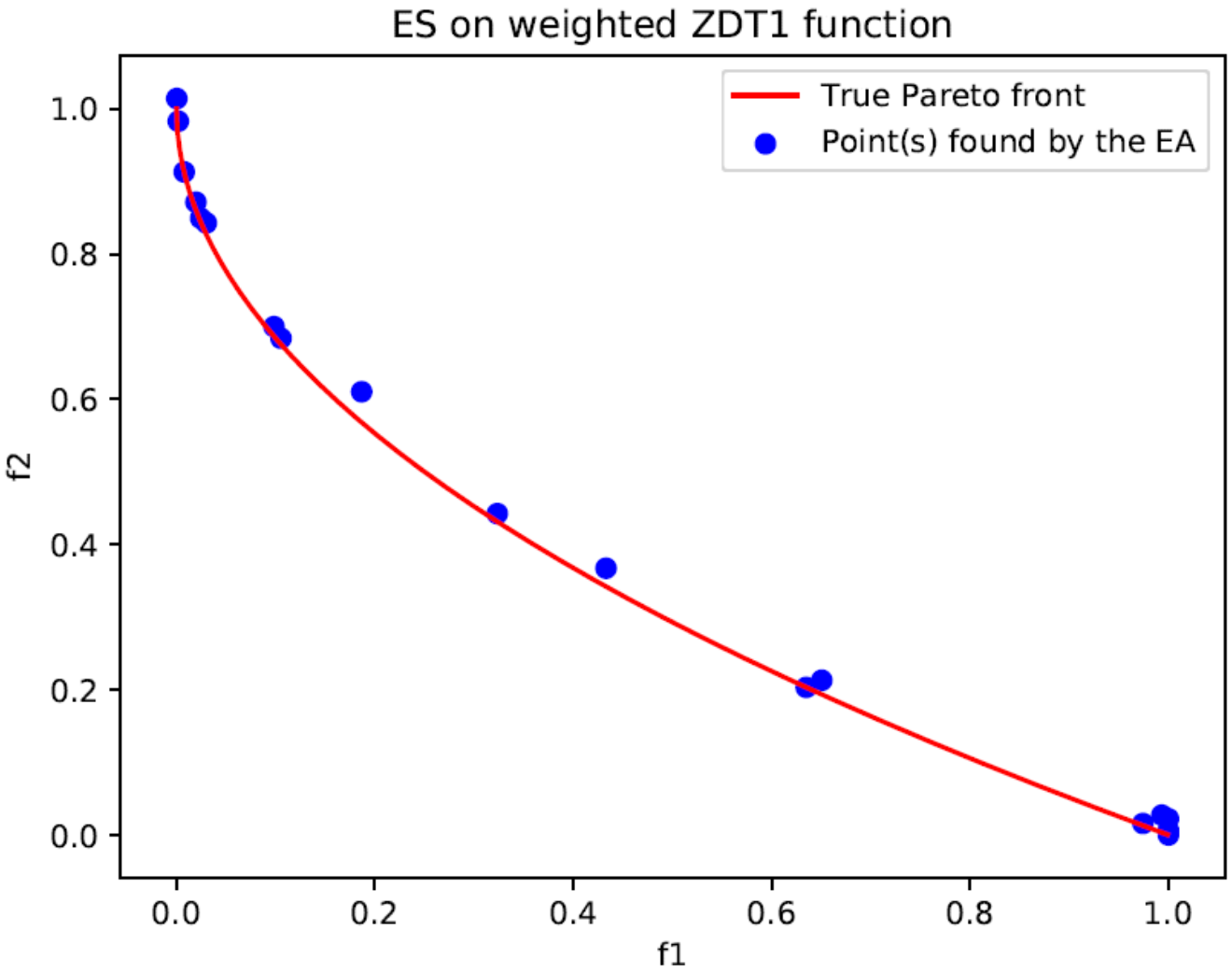
Step 1: Weighted Fitness Function

- We use functions from **inspyred**
  - In particular, Evolution Strategy (ES)
  - We convert MO problem to single-objective

$$f = f_1 * w_1 + f_2 * w_2$$

- Where w_1 and w_2 are weights in (0,1)

Step 1: Weighted Fitness Function



Step 2: NSGA-II

- NSGA-II
  - We are using the inspyred implementation
  - Run it; are the results good?
  - Tweak the parameters to improve the results

Step 2: NSGA-II