Contents

1 MultiObject Optimization

1.1 Basic

here is a link: `https://www.youtube.com/watch?v=b7CgzOFQJJw`

In a word, we consider the problem

$$\text{to minimize}\{f_1(\mathbf{x}), \cdots, f_k(\mathbf{x})\}$$

subject to some constrains, where $\mathbf{x}$ is a vector in $\mathbf{R}^k$. we need to define how to minimize that vector.

A simple way is linear weighted method, where minimizing $\{f_1(\mathbf{x}), \cdots, f_k(\mathbf{x})\}$ is equivalent to minimizing

$$\sum_{i=1}^{k} w_i f_i(\mathbf{x})$$

where $\{w_i\}$ is weight.

And the problem is solved.

1.2 Futher reading and Ref

- `https://pymoo.org/` Python Multi-Objective Optimizationa library.
- Pareto Set, Pareto Optimization, Pareto Set Front
- The Visualization of Pareto Set Front
- Evolutionary Algorithm used in MOO