

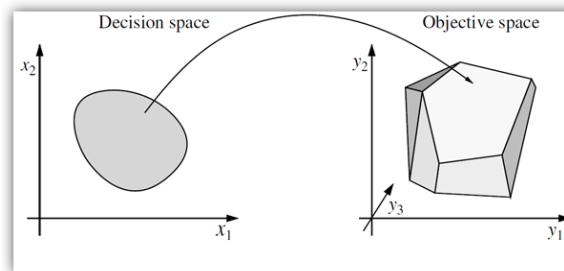
Course Project for Data Visualization, Spring 2020

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Submission deadline: 11:59 PM, June 20, 2020 (a hard deadline; will not be extended)

Problem Statement: Assume that, we have N d -dimensional vectors (i.e., $\langle x_1, x_2, \dots, x_d \rangle$) given as a matrix $N \times d$ in decision space of an optimization problem, which all are mapped to V values by M objective functions (i.e., $\langle f_1, f_2, \dots, f_M \rangle$), where $V \leq N$, $50 < N < 1000$, $d > 1000$, $1 \leq M \leq 50$ (you can consider $M=1, 2$, and 3 separately), $0 \leq x_i \leq 1$, $0 \leq f_j \leq 1$. You need to propose visualization schemes (one or more); which meet the following requirements:

- 1) Clusters of N d -dimensional vectors in decision space should be visible as much as possible.
- 2) Clusters of V M -dimensional vectors in objective space should be visible as much as possible.
- 3) Connections (mapping) among decision vectors and objective vectors should be visible as much as possible.
- 4) That is better to have a visualization scheme, which is scalable in terms of N , d , and M values.



Deliverables:

- 1) Detailed explanation of proposed visualization scheme(s) as a .pdf file, with several sample cases. Analyzing advantages, disadvantages, and limitations of the proposed schemes.
- 2) Developed code with several example cases.
- 3) Readme.txt file to explain how to run the code.