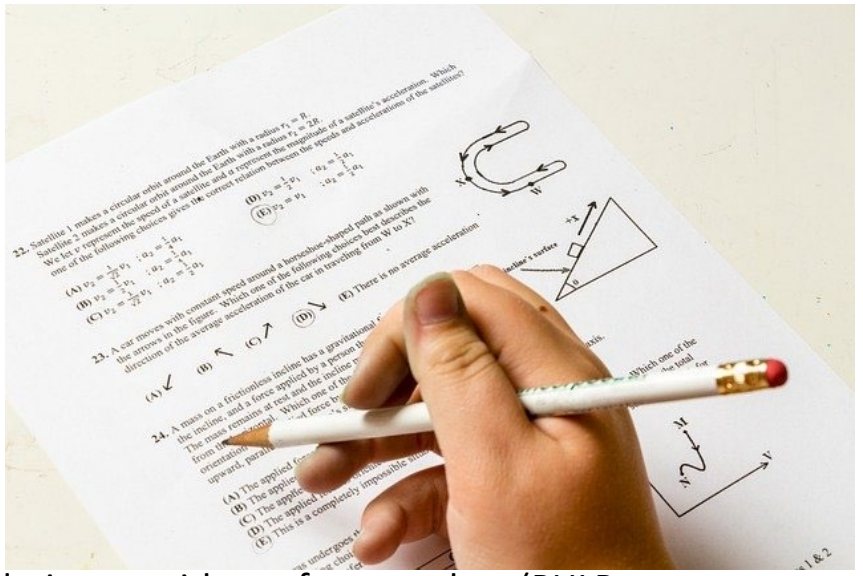
Homework Assignment JSS30COM3



Write a ca. 4-8page report on multicriteria design optimization with two objectives

Include at least one example of

1. A biobjective linear (integer) optimization problem that you solved using graphical analysis or a with a software solver (PULP, lp_solve, pyomo, online solver) approximately, using epsilon constraint method to obtain some points. It would be nice to chose an example with a real-world interpretation.
2. A 2-D geometrical design problem (tin, cone, or a shape that you find interesting) solved with epsilon constraint method and hillclimbers, including a contour plot of the function and constraints.
3. A geometric convex tent design problem solved with desdeo framework. 2-D Pareto front; including visualization of at least 3 solutions on Pareto front and scatter plot of Pareto front

For each problem:
(a) Describe briefly the objective function, constraints, variables, variable ranges

(b) Describe briefly which method you used and the basic principle/idea of the method; and the software

(c) If applicable, add graphics visualizing selected results or solution sets/processes or source code to your solution or attach it to the email when submitting the homework; you can also add other source code to your report or extend the report by more examples.

- It is possible to use results from group work in your report. There is some freedom how much effort you put but you will receive feedback. A report comprising elements 1, 2, 3 is sufficient to pass the course. Please send before August 25th 2021 the report to email of Saini, Bhupinder bhupinder.s.saini@jyu.fi and cc to m.t.m.emmerich@liacs.leidenuniv.nl

- Remark: there is some freedom how to scale the homework, and feel free to decide how much effort based on your time budget you want to put. For receiving a pass it is good to at least be complete, that is to work out a solution for part 1 , 2, and 3 (which can also be brief) . If you provide us with a very good solution or some particular effort we can reward this we can reward you with a statement that you passed with excellence. You might indicate this in your email if you aim for this.
For 4ECTs (successfull attendance) a complete solution is sufficient.