Group project

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Project overview

Aim:

- Apply the methods you learned to solve a real-world problem.
- Each group works on a different example.

Objectives:

- **Simulation**: develop a discrete events simulation and appropriately evaluate the performance in two different scenarios.
- **Optimization**: define and solve an optimization problem to obtain the optimal solution for the system.

Case study

Simulation:

- Develop a discrete events simulation.
- Identify the appropriate statistical indices.
- Correctly use simulation techniques to generate results.
- Correctly analyse the simulation results.
- Consider the efficiency and precision of simulation.

Optimization:

- Identify the decision variables.
- Define an objective function.
- Design an optimisation algorithm to solve the problem.
- Achieve a meaningful result and good interpretation.

Focus

Keep in mind:

- **BE CREATIVE**: You can make any additional assumptions that you deem to be appropriate.
- **Think deeply** about the assigned problem (extreme cases, worst case, probability of events, . . .).
- **Perform an appropriate statistical analysis**, e.g., not only average, give MSE of your estimates.
- **Consider the efficiency of your implementation and your solution.**

1 Overview

2 Group organization

Group and project

Group	Project	Title
Group 1	Project 1	Train service
Group 2	Project 2	Online movie
Group 3	Project 3	Drone delivery service
Group 4	Project 4	Vaccination strategy for a pandemic

Groups 1–2

Group	Name
Group 1	Cintas Albin Manuel
	Dai Benhui
	Delacroix Thomas Benoit
	Zhang Ru
Group 2	Duran Sala Marc
	Kolly Laurine
	Pan Cheng

Groups 3–4

Group	**Name**
Group 3	Khalooei Tafti Seyed Shayan
	Ren Kai
	Xu Chenghao
Group 4	Wei Amaury Pierre Jiezhi
	Tomarchio Barbara Anna Christina
	Yi Qi

Presentation of the project

- **30 May** 2024, MED01418.
- Make sure that the first presentation will start 9:15 on time.
- Make sure that each student of the group presents approximately the same time during the final presentation.
- 25 minutes presentation and 10 minutes Q&A.
- You should include both simulation and optimization parts.

Group	**Time**	**Review**
Group 1	9:15-9:50	Group 2
Group 2	9:50-10:25	Group 3
15 minutes break		
Group 3	10:40-11:15	Group 4
Group 4	11:15-11:50	Group 1

Project submission

- Submit **by e-mail** to `cloe.cortesbalcells@epfl.ch`, `pavel.illinov@epfl.ch`, and `lea.ricard@epfl.ch`
  1. **PDF file** for the presentation,
  2. **Jupyter notebook** for the project,
  3. **Jupyter notebooks** for the labs (one notebook per group and lab).
- Deadline: **29.05.2024 at 17:00**.
- Subject: "OptSim24 project: Group X"
- File: make one zip file "GroupX.zip".


Any
Questions?