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	Restaurant design
Group 3	Project 3	Drone delivery service
Group 4	Project 4	Jeans store management
Group 5	Project 5	Online movie streaming
Group 6	Project 6	Airline yield management

Groups 1–2

Group	Name
Group 1	Mrudhula Baskaran
	Antonina Hochuli
	Lea Trogrlic
	Ziga Casar
Group 2	Lynn Fayed
	Cristiano Trevisin
	Niloufar Vahedi
	Minru Wang

Groups 3–4

Group	Name
Group 3	Sophia Becker
	Rémy Gardier
	Marija Kukic
	Malja Xhemsi
	Juan Luis Villarreal Haro
Group 4	Cloe Cortes Balcells
	Negar Rezvany
	Corinna Barbara Frank
	Qianqing Wang

Groups 5–6

Group	Name
Group 5	Dorsa Abdolhamidi
	Onur Demiray
	Jun Han
	Philipp Schneider
	Andrea Xu
Group 6	Dharun Srinivasan
	Joseph Tharayil
	Jonas Warmuth
	Andrea Martin

Presentation of the project

- **1 June** 2021, GC B1 10.
- Make sure that the first presentation will start 13:15 on time.
- 25 minutes presentation and 10 minutes Q&A.
- You should include both simulation and optimization parts.

Group	**Time**	**Review**
Group 1	13:15-13:50	Group 4
Group 2	13:50-14:25	Group 5
Group 3	14:25-15:00	Group 6
15 minutes break		
Group 4	15:15-15:50	Group 1
Group 5	15:50-16:25	Group 2
Group 6	15:50-17:00	Group 3

Project submission

- Submit **by e-mail** to `rico.krueger@epfl.ch` and `melvin.wong@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: **Noon on Tuesday, 1 June 2021**.
- Subject: "OptSim21 project: Group X"
- File: make one zip file "Group$X$.zip".

Any
Questions?