

Stage de master – MSc internship

Ramping-up health care systems

Duration: 6 months – Starting between February and April 2023

Salary: about 550€/month

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Keywords

1. Business process modeling
2. Multi agent systems
3. Health care systems

Description

Face to a pandemic the health care network has to increase quickly its capacity of care. In a previous research work, a simplified centralized optimization model has been developed in order to compute a resource management plan for a hospital network according to the forecast of the flow of patients. This model has, however, two main drawbacks:

1. hospitals' difficulty in changing their capacity is modeled as a single weight in an objective function.
2. individual hospitals' governance and strategy are not taken into account.

This work has the objective to overcome these two drawbacks by modeling the problem using business process modelling and assessing hospitals' strategies using multi agent systems simulation. In particular,

1. to elaborate a more detailed model of the hospitals' strategy (i.e., decision-making process) to identify delays and costs to reach the new targeted capacity.
2. to evaluate the impact on the outcome of the coordination of these individual hospitals' strategies and compare with the centralized optimization solution.

Thus, the internship aims to address the ramp-up problem in healthcare facilities by exploring agile methods in conjunction with modeling and simulation. The internship will be conducted within the framework of the [RAMP-UP II project](#).

Desired Skills

- Process modeling tools and languages (e.g. BPMN).
- Programming (e.g. Java).
- Any experience/knowledge of multi-agent systems will be valued.

Application

- The application should include the following: a short résumé, cover letter, and transcripts of the past year
- Application and requests should be emailed to garaix@emse.fr (copy to luisgustavo.nardin@emse.fr and khaled.medini@emse.fr)
- Deadline: January 10, 2023