PhD thesis (2018-2021) granted by Agence Nationale de Recherche (ANR)
Project: OIILH (Optimisation Inter et Intra Logistique Hospitalière)
PhD proposal title: Resource planning and scheduling of tasks in the inter and intra hospital logistics chain
PhD grant: 3 years scholarship granted by ANR
Thesis supervisors: Jean-Paul Boufflet and Aziz Moukrim
Research laboratory: Heudiasyc UMR 7253, SCOP team
Key words: Operations research, planning, scheduling, optimization

PhD subject:
In the management of healthcare production systems, the control of hospital flows is a major issue that depends on the efficiency of the use of human resources but also on renewable and non-renewable material resources. This is particularly the case in adult emergencies whose operation and patient pathway are complex. Activity peaks and bottlenecks are sources of difficult-to-control tensions that are related to patient flows (inbound and outbound) and related care processes.

Emergency care requires the resources of a mesh of interacting infrastructure elements. Improving the efficiency of the patient's pathway requires the optimization of logistics and the area to be considered includes Upstream, Intraservice and Downstream (UID).

The objective of this thesis is the study and the development of models and optimization methods for the scheduling of direct or indirect care tasks with multiple competences taking into account the material and human resources. The PhD student will work mainly on the development of optimization and scheduling methods for the construction of dynamic schedules for medical staff taking into account the constraints of the UID domain.

As part of the ANR OIILH project, the aim is to design and develop a system for scheduling and planning UID resources. The goal is therefore to study and develop a patient-centric computer control architecture. We aim to address the scientific obstacles related to optimization that hospitals must implement by studying the UID through the angle of scheduling and planning approaches

Requirements: research master's degree in applied mathematics or computer science with operation research skills in his/her curriculum

Required skills: C++, python, CPLEX or COIN OR (https://www.coin-or.org/)

Location and duration:
Heudiasyc laboratory, UMR CNRS 7253, https://www.hds.utc.fr
3 years scholarship granted by ANR.

How apply:

On CNRS website : https://emploi.cnrs.fr/ for « Job type » select « PhD Student contract/Thesis », next for « Region » select « Hauts-de-France », finally « Search »

⇨ Please, send also extended CV + master's degree + master grades and ranks for all semesters by e-mail to: Aziz Moukrim et Jean-Paul Boufflet (aziz.moukrim[at]hds.utc.fr, jean-paul.boufflet[at]hds.utc.fr)