

## POST-DOC POSITION

### Sensors' network design to monitor homecare patients

#### Research context

Under the H2020 DIH4CPS project (<https://dih4cps.eu/>), the University Lumière Lyon 2 supports Linde Homecare France in the development of an application experiment (<https://dih4cps.eu/experiment-2/>) related to Comprehensive Homecare Smart Monitoring. The proposed experimentation aims at upgrading homecare patients (i.e., sleeping apnea) with more sensing capabilities. The new clinical and environmental monitoring data will support the personalisation of patient treatment. Using a first sensors network (PoC), data exploitation models are developed and encapsulated in comprehensive software solutions to be experimented with clinical patients.

#### The post-doc research project

The proposed post-doc research project aims at consolidating a reliable sensors network for the Homecare sector able to extend the sensing environment of patients. The work programme covers, but not limited to, the following missions:

- Analyse the existing sensors catalogue, already identified, and experimented in a first PoC;
- Perform a deeper related-work analysis about sensing requirements in homecare monitoring;
- Analyse the constraints, requirements and risks from existing standards related to medical devices: ISO 13485:2016, ISO 15223-1:2016, ISO 14155:2020, ISO 14971:2019, CE MDD, 93/42/EEC, etc.
- Propose a comparative analysis of existing reliable sensors regarding their sensitivity, connectivity, etc. from commercial sensors catalogues<sup>12</sup> as well as advanced research initiatives<sup>3</sup>;
- Perform a gap analysis and motivate the selection of the new sensors network;
- Design the sensors network;
- Develop and experiment the data collection mechanisms;
- Develop the conformity assessment procedure;
- Valorise the proposed research project in scientific papers.

#### Application procedure

The proposed post-doc position is scheduled for 1 year starting from April 2021. Interested researchers are invited to submit their application no later than the March 31<sup>st</sup>, 2021 by email to Nejib Moalla ([Nejib.Moalla@univ-lyon2.fr](mailto:Nejib.Moalla@univ-lyon2.fr)) with the following documents:

- Updated CV,
- Motivation letter,
- At least one recommendation letter,
- Examples of scientific publications related to the project subject,
- Links for demos to developed projects, software codes, etc.

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<sup>1</sup> [https://www.te.com/content/dam/te-com/documents/sensors/global/SensorSolutions\\_MedicalApplications.pdf](https://www.te.com/content/dam/te-com/documents/sensors/global/SensorSolutions_MedicalApplications.pdf)

<sup>2</sup> <https://www.rfwireless-world.com/Articles/Medical-sensor-basics-and-medical-sensor-types.html>

<sup>3</sup> <https://www.cooking-hacks.com/documentation/tutorials/ehealth-biometric-sensor-platform-arduino-raspberry-pi-medical.html>