

Software for the simulation of percutaneous cardiac interventions and the training of healthcare staff (Cathlab Sim)

DESCRIPTION OF THE TECHNOLOGY

The software object of this registry forms the logical part of a simulator designed for the training of percutaneous interventional cardiology procedures, both coronary and structural, as well as for the training of healthcare professionals. Given the nature of training in the field of health, this application can be adapted to the training needs throughout the work period: university training, specialized health training (MIR), specific training areas (training by MIR, fellowships), or training in the novel or specific techniques. CathLab Sim simulates the process that the human heart system follows in its aspects, both mechanical (simulation of blood pressure) and electrical (electrocardiogram), in addition to the algorithms for the control and manipulation of the variables that cardiologists need to treat the pathologies of their specialty.

APPLICATIONS

Cathlab Sim offers the following tools to healthcare personnel:

- App interface and system parameterization.
- Simulation and control of blood pressure.
- Simulation and control of the heart rate.
- Possibility of simulating different cardiac pathologies, by generating their ECG waves.
- Representation of the ECG (Electrocardiogram), depending on different cardiac pathologies and types of waves. How are QRS morphology, rhythm, ventricular fibrillation and ST increase, thus simulating certain types of acute myocardial infarction, and other pathologies.

ADVANTAGES AND BENEFITS

The advantages of this system are, on the one hand, the possibility of analysing and personalizing the intervention of complex cases before entering the operating room, thus protecting the patient and ensuring that their case will be investigated with the maximum guarantees. On the other hand, the training

of health personnel in the specialty of cardiology, subjecting them to extreme situations so that they can apply their knowledge in any simulated context, before acting on patients directly. In addition, the system is remotely managed from a mobile APP. Part of the software is executed on a Smartphone or Tablet, which is responsible for connecting with the electronics and sending control data, such as heart rate and blood pressure.

STATE OF DEVELOPMENT

The software has been laboratory tested with satisfactory results. There is interest on the part of the medical team at the La Fe hospital in Valencia. Important modifications have been included considering for to the initial situation, mainly about concerning to the incorporation, and consequent programming, in aspects related to the sensorization and monitoring of the different points of the system, in addition to the incorporation of new pathologies. Currently, we are in the phase of adapting it to the different interfaces of the hospital environment, so that professionals can use it in training and simulation of real cases, and in their training.



INTELLECTUAL PROPERTY

Software registered with registration number ND-374-2020 on July 10, 2020. Ownership of the software corresponds to 66.67% to the UPV and 33.33% to INCLIVA, dividing in the same proportion the rights and obligations inherent to it.

CONTACT

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COLLABORATION SOUGHT

Hospitals or hospital environments interested in technology, as well as any other medical systems company specialized in the automation of hospitals and laboratories of cardiovascular interest.

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