MSCA Postdoctoral Fellowships: Proposal writing bootcamp at FEUP

Postdoctoral Fellowship
Marie Skłodowska-Curie Actions

2nd edition

U. PORTO
FEUP FACULTY OF ENGINEERING UNIVERSITY OF PORTO

European Commission

SUPERVISOR INFORMATION	
First and Last name	Joaquim Mendes, jgabriel@fe.up.pt, tel. (+351) 911164783
URL of supervisor webpage	www.fe.up.pt
Department	Mechanical Engineering
Field(s) of research	Medical Robotics

PROJECT PROPOSAL	
Title (optional)	Augmented Reality in Medical Robotics Training
Brief project description	

This project aims to support medical doctors in using robotic systems and other equipment in the surgery room through the use of augmented reality / virtual reality safety training environments.

The framework to be developed includes:

a) The 3D scanning of the real spaces, namely the surgery room at the hospital and its transference to the virtual environment
b) Each equipment will be supported by AR to allow anyone to learn and test the virtual operation of the instrument virtually.
c) The same will be done to the robotic arms used in orthopedics to allow the medical staff to be familiar with their use and the complete procedures
d) Real instruments, namely the ones used in laparoscopy, will be combined with the virtual environment – mixed reality – to foster the training and evaluation of the trainees
e) Add sensors to real laparoscope instruments to extend the amount of information retrieved from their use and thus create more complete feedback reports
f) AI algorithms will be used to create new environments / health problems, help the trainees master the techniques, and evaluate
g) Process Medical Images in order to produce STL files to be able to print in 3D body parts

Note: A medical-grade robot, 3D camera, Meta Quest, and HoloLens are available.

The work will be performed at the Faculty of Engineering, University of Porto, together with the orthopedics service of the Hospital de Santo António in the center of the city.

The potential candidates may address one or more of the previously listed topics

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