UNIVERSITY OF GENOA
DEPARTMENT OF INFORMATICS, BIOENGINEERING, ROBOTICS AND SYSTEMS ENGINEERING
MASTER'S PROGRAM IN BIOENGINEERING

Dibris

Thesis Project Form

Title (tentative): Implementation of a pelvic simulator for obstetrics training

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Address:

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Description

Motivation and application domain

Estimating the correct position of the fetus inside the birth canal is fundamental for all midwives, especially those not having any ultrasound training. Indeed, an incorrect evaluation can endanger newborns and mothers.

General objectives and main activities

The goal of this work is to validate an existing proof of concept of a pelvic simulator (eBSim) that combines physical models of a maternal pelvis and fetal head, with a virtual representation of these models. The student should analyze all the components of the simulator (hardware and software) and make changes with the final goal of turning the proof of concept into a simulator usable by healthcare professionals.

Tasks to complete includes:

- Calibration of different measurement systems and hardware modifications
- Definition and implementation of checklists, scoring and data saving systems
- Software improvements (e.g. development of a user freindly graphic user interface)

At the end of the development phase, the simulator will be tested with gynecologists and midwives collecting and analyzing subjective and objective measures.

Training Objectives (technical/analytical tools, experimental methodologies)

With this project, students can:

1. Understand how sensors and microncontrollers work
2. Use different programming languges (e.g. Javascritp, C#)
3. Use software for VR application development (Unity3D, Blender)
4. Take part into a multidisciplinary project involving clinicians, engineers and medical students

Place(s) where the thesis work will be carried out: Joint lab for Emerging Technologies in Simulation (at SimAv)

Additional information

Maximum number of students: 1