TELMA

Exploitation, enrichment and efficient management of surgical video allows the development of Telm@, a new MIS (minimally invasive surgery) learning environment based on web technologies

Contact information

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Technological Offers type

Technological solutions

Research and innovation areas

- Digital Technologies, Artificial Intelligence, Cybersecurity, 5G, Robotics
- Health and Wellbeing
- Social Innovation, Open Science, Governance, and Education Science

ODS

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Where?

Bioengineering and Telemedicine Group Center for Biomedical Technology

Keywords: | education | surgery

Brief description of the technology solution and the added value it provides

The solution presents a training and on-line learning environment based on laparoscopic video edition, knowledge management and collaborative work to improve the effectiveness and efficiency of surgeon's training process (both initial and ongoing). Telm@ supports the optimization of the trainee´s learning curve, while providing surgeons ubiquitous access to didactic contents and methodologies and allowing them being more active and developing greater interactivity, a greater acquisition of knowledge and skills as well as a better use of the information sources available. The solution will reduce direct training costs and indirect health care costs associated with hospital stays and postoperative complications.

Description of the technological base

The paradigm shift that is assuming the introduction of the MIS in clinical routine requires a change in the patterns of training new professionals.

Telm@ has created a new training strategy based on knowledge management, cooperative work and information and communication technologies in order to improve the effectiveness of the training process (initial and ongoing) of surgeons.

A new learning environment based on web technologies has been developed, providing a custom learning service to users and allowing them to create, share and reuse didactics contents in compliance with specific learning needs. For the above reasons, the use of the laparoscopic video is at the core of the didactic contents, adding them educational value by using an authoring tool tailored to the needs of surgeons.

"The environment enhances the didactic value of surgical videos by editing them, giving the user a more interactive role in their initial or ongoing training and fostering collaboration between users with different surgical experience"

Market demands

Inicial training

- Society demands greater investment in training and raising awareness of doctors and patients about the MIS benefits, which will increase its safety use.
- It is critical the development of training methodologies and the effective transfer of skills from the training environment to the doctors, in order to standardize the training and accreditation in MIS.
- Society demands effective training programs, which take into account the complex stages in the training of surgeons. Currently, such training processes for new surgeons are very demanding, extensive and costly
- During the early stages of training, teaching should focus on the acquisition of knowledge outside the operating room, so that patient safety is not compromised due to medical errors resulting from a lack of preparation.
- Training programs with objective assessment that provide feedback to students on their progress in the learning curve are needed.
- Nowadays there is a video repository of surgeries that are not used for doctors training but have great educational potential.

Ongoing training

- Informal training for professionals who require little or no supervision.
- Fostering the exchange of knowledge among professionals for dissemination and training in new techniques of MIS.

"The active participation of students in their learning processes, the reproducibility of the tasks and teaching flexibility are key requirements to reduce the learning curve"

Competitive advantages

- Customized training: personalized learning content recommendation focused on training pathways linked to specific learning processes.

- Efficient management of knowledge: the solution monitors processes and interactions in the training environment, allowing the creation, capture, storage and distribution of information, turning it into reusable knowledge.
- Content management: content ingestion, automatic transcoding of new content to different qualities. Content retrieval based on medical thesaurus.
- Objective assessment of skills: the solution provides valid and reliable data about student performance automatically, instantly and objectively.
- Enrichment of surgical videos: the solution provides an authoring tool that allows the creation of educational content based on the editing and processing of surgical videos.

Development stage

- Concept
- Research
- **Lab prototype**
- Industrial prototype
- Production

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