

Motivation

The main research efforts in therapeutic field are dedicated to reduction of invasiveness of surgical interventions and personalized medicine.

The ideal and paradigmatic example of Minimally Invasive Surgery is whenever the therapy can be completely non-invasive, such as, for example, in Focused Ultrasound Surgery.

We strongly believe that robotics is the way to improve the robustness, precision, repeatability and reproducibility of FUS

Objective

The aim of FUTURA is to develop an autonomous and human-supervised robotic platform to perform a completely non-invasive therapy by means of FUS applied to soft tissues. The robustness, safety, and accuracy of FUS procedures will be enhanced by exploiting robotic assistance, through closed-loop control – by means of real-time therapy monitoring and self-learning procedures – thanks to specifically developed algorithms.

The Consortium

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- University of Dundee, Dundee, United Kingdom
- Image Guided Therapy, Bordeaux, France
- Camelot Biomedical Systems, Genova, Italy
- S.M. Scienza Machinale, Pisa, Italy
- IBSMM, Brno, Czech Republic



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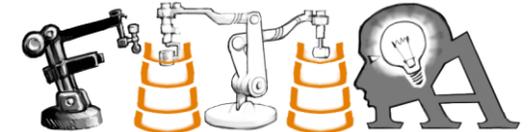
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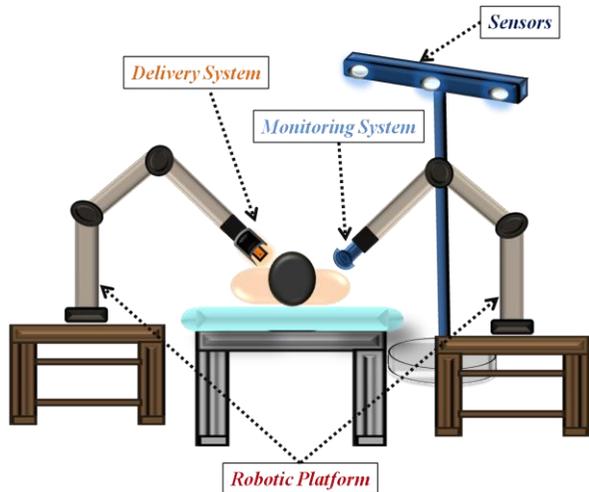
FP7-ICT-611963



Focused Ultrasound Therapy Using Robotic Approaches

Grant no.: FP7-ICT-611963
Starting: November, 1st 2013
Duration: 36 Months
Partners: 6 from 4 EU countries
Cost: 3.6M€
EU contribution: 2.8M€

The platform



The platform is composed of the robotic arms, on holding a therapeutic ultrasound transducer and the other a 3D-US monitoring system. Smart sensors will ensure robot co-operation and human-robot interaction. Cognitive processes will reduce reliance on operator skill and improve adaptability on different situations.

Expected Results

- Merging surgical robotics, non-invasive ultrasound therapy and machine learning for medical imaging.
- Development of a multifunctional robotic surgical platform able to perform different tasks and which possesses cognitive capabilities such as collision avoidance and obstacle perception.
- Improvement of planning and monitoring of Ultrasound therapy.
- Improvement of therapy delivery.

Addressed Topics

Stemming from the disruptive idea to develop an autonomous/human-supervised robotic platform for a non-invasive focused ultrasound surgery, the merging of multidisciplinary knowledge is mandatory.

