




Partners

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UNIVERSITÀ di VERONA

Cognitive control, Task supervision and Computer vision
- 


UNIMORE

Multi-modal Human-Robot Interface and Teleoperation
- 


University of Ferrara

Robot Motion Planning and Reconfigurable Planning
- 


I.R.C.C.S. Ospedale San Raffaele

Surgical procedure Specification and Validation, Dissemination and Communication
- 


UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH

Multi-robot Cooperation and Task Planning
- 


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Anatomical Modelling, artificial and hybrid Phantoms
- 

OXFORD BROOKES UNIVERSITY

Reasoning and Situation Awareness
- 

MEDINEERING SURGICAL ROBOTICS

Hardware Adaptation and Business Models
- 

acmit

AUSTRIAN CENTER FOR MEDICAL INNOVATION AND TECHNOLOGY

Phantom Augmentation



PROJECT COORDINATOR

University of Verona, Italy

CONTACT PERSON

Dr Riccardo Muradore

Tel: (+39) 045 802 78 35

email: riccardo.muradore@univr.it

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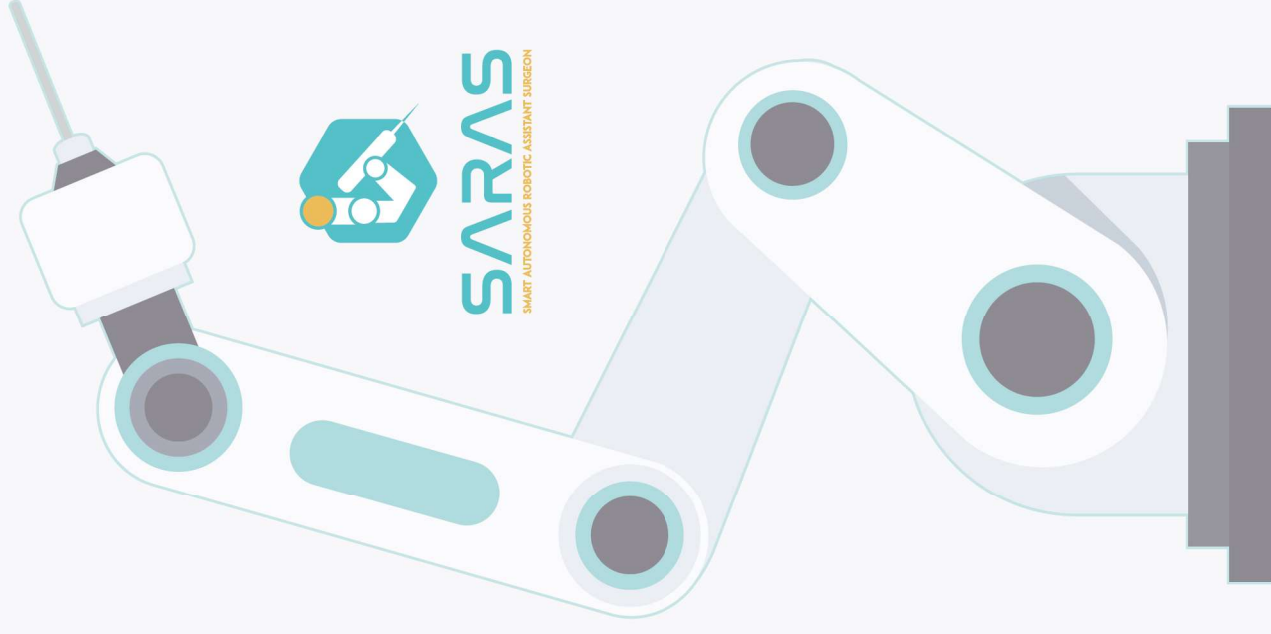
@SarasH2020



www.saras-project.eu



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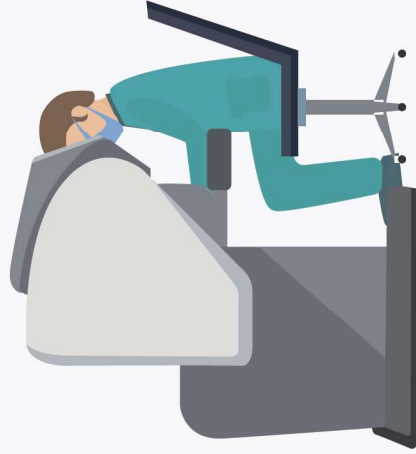
SARAS
SMART AUTONOMOUS ROBOTIC ASSISTANT SURGEON

PROJECT AT A GLANCE



Currently, during laparoscopic or robotic assisted surgical procedures, several units of medical personnel are requested to stay in the operating room for supporting the main surgeon tele-operating the surgical robot. This practice leads to an inefficient management of the hospitals' economic resources and to unnecessary long waiting lists for patients.

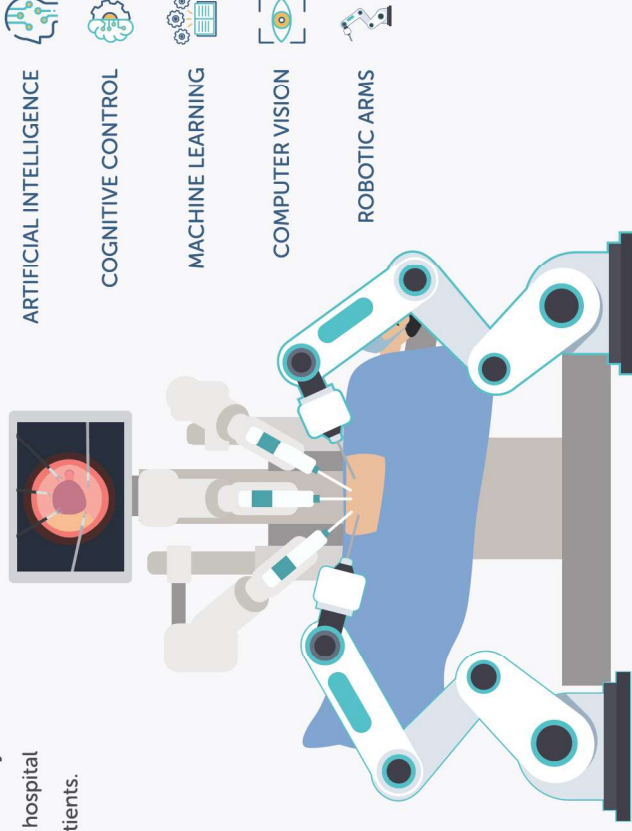
The goal of SARAS is to develop the next-generation of surgical robotic systems that will allow a single surgeon to execute Robotic Minimally Invasive Surgery (R-MIS) without the need of an expert assistant surgeon, thereby increasing the social and economic efficiency of a hospital while guaranteeing the same level of safety for patients.



SARAS TECHNOLOGY



1. Two assistive robotic arms designed to implement the tasks currently done by the assistant surgeon in R-MIS, by holding off-the shelf laparoscopic instruments.
2. A perception module to recognize the action of basic surgical tasks and to detect organs.
3. A cognitive module collects the outputs of the perception module, plans collision-free trajectories of the SARAS arms, and executes surgical tasks like cutting tissues and threads, holding and moving organs.



SARAS PLATFORMS



1. **MULTIROBOTS-SURGERY platform:** the main surgeon uses a commercial robotic system whereas the assistant surgeon tele-operates the SARAS assistive robotic arms.
2. **SOLO-SURGERY platform:** the SARAS system is autonomous and plays the role of the assistant to help the main surgeon at the da Vinci console performing the surgical procedure.
3. **LAPAROS2.0-SURGERY platform:** SARAS system plays the role of the assistant as in the SOLOSURGERY case, but the main surgeon uses standard handheld laparoscopic tools.

AMBITION

The SARAS project is developing a solo-surgery system that consists of a pair of cooperative and autonomous robotic arms holding the surgical instruments.

SARAS assistive robotic arms is going to be able to perform the same tasks that are now carried out by the assistant surgeon during R-MIS procedures and as a result SARAS will be used alone for traditional laparoscopic operations performed in solo surgery mode.