**Short Abstract Workshop on Key Technologies for Autonomous Robotic Surgery – KTARS 2019**

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**SHORT ABSTRACT** (max 500 words)

In the last ten years, robotics has gained ground in most areas of surgery. Robots are enabling significant changes in the complete surgical process. In particular, robots are used together with other computer-based technology to offer surgeons timely information and advanced actuation for some complex steps of surgical interventions. However, the way that information is presented is not fully integrated with the robotic actions. Further, little support is given to surgeons to acquire a better understanding of the current medical situation of the patient. To get more control of the situation, the medical community is asking for further technical innovations and is often demanding party to develop new forms of intelligent surgery in the operating room.

Autonomous Robotic Surgery (ARS) strives to respond to these requests. Advanced mechatronic solutions are integrated with actuation and real-time sensing. Benefiting from the increased computation power that is available in the operating room these days, it becomes possible to develop reasoning algorithms that run in real-time in the operating room. Combined with intuitive surgeon-robot interfaces, these algorithms can, for example, monitor the surgical workflow, control the execution of partially automated procedures, manage the information that is presented to the surgeon, or fuse pre- and intraoperative multimodal images.

This workshop/tutorial aims at reviewing the basic concepts of robotic surgery, at discussing current challenges in sensing, actuation and surgeon interfaces, and at introducing key elements of cognitive control in surgery. The main objective of the tutorial is to stimulate the audience’s interest in this field, to provide some fundamental scientific and technical insights, and to show the relevance to and the support from the surgical community for this initiative. This tutorial follows earlier successful workshops on similar topics held in Heidelberg in January 2012, Milano in July 2012, Karlsruhe in May 2013, Istanbul 2015, and at the 2013, 2014, 2015, 2017, 2018, 2019 Hamlyn Symposia. These past events established the fundamental aspects of cognitive robotics for surgery. The current workshop/tutorial, on Key Technologies for Automous Robotic Surgery (KTARS 2019), will summarize and expand on those previous successful events. The Workshop is organized as part of the 19th International Conference on Advanced Robotics (ICAR 2019). It will be held on 5th or 6th December, 2019 at the conference location, the Federal University of Minas Gerais (UFMG).

**KEYWORDS** - keyword 1, keyword 2, keyword 3.



**Figure.1.** Relevant figure to support the extended abstract.

**REFERENCES**

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