

Novel sensing techniques as foundation for autonomous robotic surgery

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Autonomous robotic surgery is receiving increased attention lately. Even surgeons and interventionalists are intrigued by these developments as many realize that this technology may take out some of the complexity they are facing more and more. This talk introduces a number of recent and new sensing technologies that help building up the local awareness of the robot. Understanding the own pose/ shape and/or contact state helps building up fast computational local models that – as shown in this talk – can be employed to encode local autonomous behavior. Thanks to this, the surgeon can focus on higher level cognitive tasks. The navigation of a robotic catheter is taken as an example to sketch the potential benefit for the interventionalist.