

EndoPAR: Ein Trainingssystem für minimal invasive Chirurgie

EndoPAR: An Open Training System for Minimally Invasive Robotic Surgery

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Endoscopic surgery has become an important operation technique in the last decades and has entered daily practice at most medical sites. Manually performed minimally invasive surgery however suffers from complicated handling due to long instruments and insufficient manipulability inside the body. In addition visual feedback is significantly reduced. These drawbacks were overcome by inclusion of robotic systems allowing human-like dexterity and high-quality endoscopic view. Nevertheless those systems themselves have some limitations, like missing force sensory and feedback, and therefore prolonged operation time.

We have developed an experimental training system, which we use to tackle both issues. On one hand high fidelity force sensory and feedback has been integrated, on the other hand basic machine learning techniques were probed. We have also evaluated the impact of force feedback on certain surgical tasks like knot-tying.

Processing certain recorded manipulation sequences and their reintegration into the system was successfully performed and led to reduced execution time.

