

Advanced Medical Devices Laboratory

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Our research aims at new medical applications based on Robotic technology. Robotic technology includes many elements – mechanism, sensor, control, system integration and etc. We study about these elements to realize further effective medical applications.

In recent years, medical robots were found to be effective, namely, in Surgery and Rehabilitation [Trinh2012, Mehrholz2015, Kwakkel2008]. We further study about robotic technology to extend the medical applications. One of our research topics is about surgical robot. We recently presented a surgical manipulator with 2 mm in diameter, realizing 4 degree-of-freedom at the tip. The manipulator was implemented by using largely deformable elements that greatly contributed to the compact and sterilizable structure [Arata2019]. Our hand rehabilitation robot is currently in clinical trials under the collaboration with a pharmaceutical company, a manufacturing company and a start-up company [Mukae2019]. The lab is collaborating with many external experts, including medical doctors, therapists, engineers, public organizations and companies to pursue new medical applications based on Robotic Technology.

