# “Designing new mechanism in surgical robotics”

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## Abstract

Differ from the conventional robotic design in industry, a new approach is needed in the development of surgical robotic system to be suited for OR environment. (e.g. compatibility of sterilization of the device, and safety both for patient and surrounding medical staff.) As a representative example, miniaturized surgical robotic tools have been widely studied by introducing wire, mechanical link, pneumatic and parallel mechanisms, especially for minimally invasive surgical devices. As a new approach, we introduce soft (compliant) robotic design in a parallel structure in the talk. In addition, other on-going surgical robotic projects in our institution will be presented.

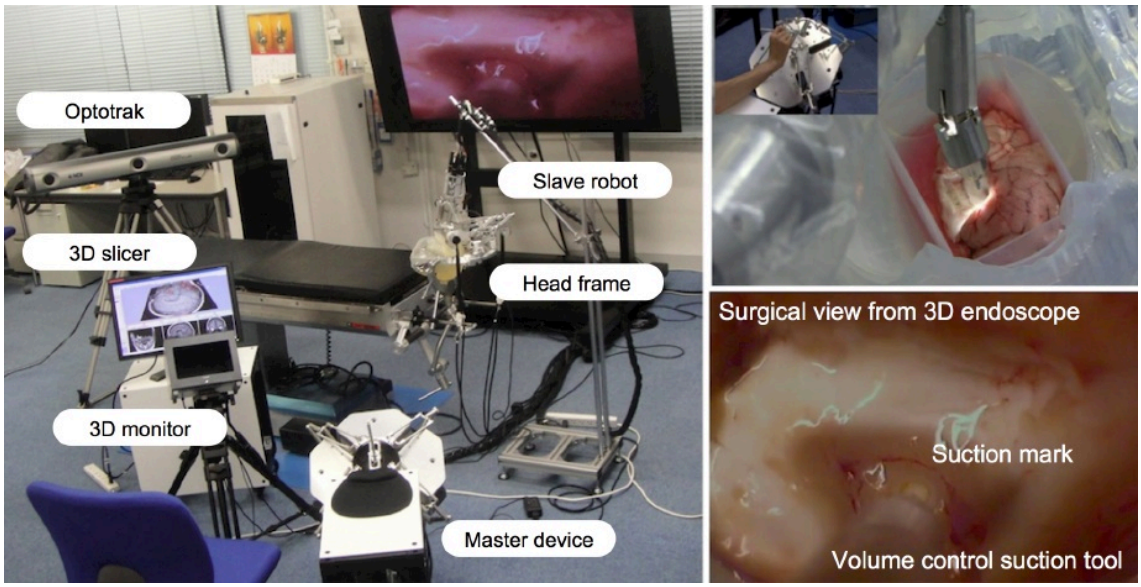


Figure 1. Neurosurgical robotic system for brain tumor removal.

## References

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**Speaker Bio**

Jumpei Arata received the Undergraduate degree in mechanical control systems and the Master's degree in mechanical engineering from Shibaura Institute of Technology, Tokyo, Japan, in 1997 and 2000, respectively, and the Ph.D. degree in mechanical engineering from the University of Tokyo, Tokyo, Japan, in 2004. In 1998 and 2001, he was with the Swiss Federal Institute of Technology Lausanne, Switzerland, granted by an international exchange program and a Swiss Federal Scholarship. During this period, he was also an Assistant and a student. He was an Assistant Professor at Nagoya Institute of Technology, Nagoya, Japan until June 2013 and recently moved to the Centre for Advanced Medical Innovation at Kyushu University, Fukuoka, Japan. His research interests include parallel mechanisms, flexible mechanisms, haptic devices, and medical robotics. Dr. Arata is a member of the IEEE Robotics and Automation Society, the Robotics Society of Japan, the Japan Society of Mechanical Engineers, the Japan Society of Computer-Aided Surgery, and the International Society of Computer-Aided Surgery.