

MRI-guided Robotic Interventions: From Engineering to Clinical Application

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要旨

The goal of this lecture is to present our engineering and clinical efforts to apply robotic technologies to clinical practice in a unique research environment at National Center for Image Guided Therapy, Brigham and Women's Hospital. In this lecture, I will introduce our magnetic resonance imaging (MRI)-compatible robotic system specifically designed for prostate interventions. MRI has been considered a suitable imaging modality for interventional guidance due to its superior soft tissue contrast, high spatial resolution and the lack of harmful effects from ionizing radiation. Despite the today's availability of MRI scanners, however, MRI-guided interventions are not widely performed due to the lack of tools to support the clinical procedures in the closed space of an MRI scanner with a strong magnetic field. As an enabling tool for MRI-guided interventions, we have been developing an MRI-compatible robotic system consisting of needle placement manipulator, planning/navigation software and real-time MRI scanner. My talk will cover the clinical backgrounds and the technical details of our MRI-guided robotic interventions, as well as our efforts to launch a clinical trial using our robotic system.



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