

Control and safety architecture for a modular medical robot

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In this paper a new approach for a control and safety architecture for a modular task adaptable medical robot is described. The concept has been evaluated with the MINARO robot, which was developed in the OrthoMIT framework for revision total hip replacement (RTHR), being one of several possible applications. By modularizing the system we tried to combine the advantages of medical robots (e.g. higher accuracy, lesser invasiveness) with the advantages of modularisation (increased flexibility, lower costs). Based on the mechanical building blocks and under consideration of the high safety demands in robotic surgery a modular control and safety architecture was developed. Solutions for the automatic identification of the modules and supervision of the system were integrated. Prototypal systems have been used to verify the feasibility of the concept.

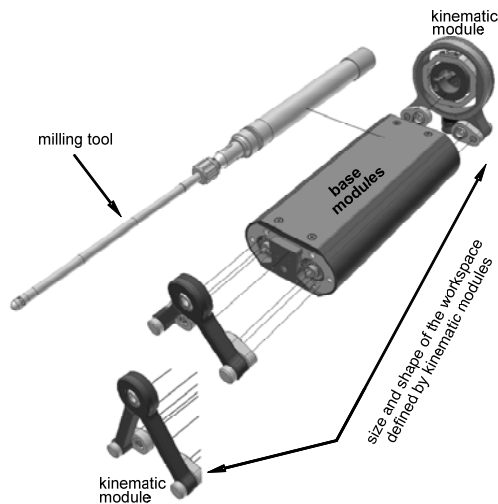


Fig. 1: Modular mechanical structure of RTHR robot