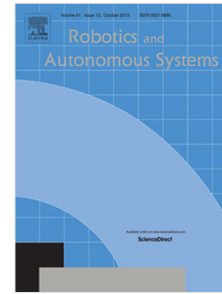


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# Medical Robots with Potential Applications in Participatory and Opportunistic Remote Sensing: A Review

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## Abstract

Among numerous applications of medical robotics, this paper concentrates on the design, optimal use and maintenance of the related technologies in the context of healthcare, rehabilitation and assistive robotics, and provides a comprehensive review of the latest advancements in the foregoing field of science and technology, while extensively dealing with the possible applications of participatory and opportunistic mobile sensing in the aforementioned domains. The main motivation for the latter choice is the variety of such applications in the settings having partial contributions to functionalities such as artery, radiosurgery, neurosurgery and vascular intervention. From a broad perspective, the aforementioned applications can be realized via various strategies and devices benefiting from detachable drives, intelligent robots, human-centric sensing and computing, miniature and micro-robots. Throughout the paper tens of subjects, including sensor-fusion, kinematic, dynamic and 3D tissue models are discussed based on the existing literature on the state-of-the-art technologies. In addition, from a managerial perspective, topics such as safety monitoring, security, privacy and evolutionary optimization of the operational efficiency are reviewed.

*Keywords:* healthcare, medical robotics, opportunistic sensing, participatory sensing, robotic systems

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