Assistive-as-needed strategy for upper-limb robotic systems: An initial survey

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ABSTRACT
Stroke is amongst the leading causes of deprivation of one's ability in carrying out activities of daily living. It has been reported from literature that, the functional recovery of stroke patients are rather poor, unless frequent rehabilitative therapy is assumed on the affected limb. Recent trends of rehabilitation therapy have also shifted towards allowing more participation of the patient in the therapy session rather than simple passive treatments as it has been demonstrated to be non-trivial in promoting neural plasticity to expedite motor recovery process. Therefore, the employment of rehabilitation robotics is seen as a means of mitigating the limitations of conventional rehabilitation therapy. It enables unique methods for promoting patient engagement by providing patients assistance only as needed basis. This paper attempts on reviewing assist-as-needed control strategy applied on upper-limb robotic rehabilitation devices.

KEYWORDS:
Neuromuscular rehabilitation; Patient treatment; Robotics