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Distributed Intelligent Sensor Network for Neurological Rehabilitation Research

By Hong Ying

Shaker Verlag Nov 2011, 2011. Taschenbuch. Condition: Neu. Neuware - This project introduces a distributed intelligent sensor network for neurological rehabilitation, designed to address clinical needs of patients with Parkinson's Disease (PD). Frequently, PD patients suffer from tremor at rest, rigidity, bradykinesia, and postural instability. Furthermore, there is often reduced coordination between respiration and locomotion, i.e., footsteps are in coordination with respiration in healthy subjects, whereas this coordination is disordered or even absent in PD patients. Monitoring and assessment of the coordination provides interesting insight into PD neurological rehabilitation: can the level of this coordination be an index for which the health status or rehabilitation progress of PD patients is gauged Can improving this coordination promote rehabilitation of PD patients Resolution of these issues requires a mobile sensor network system, which allows long-term monitoring of these vital signals, along with real-time analysis of the respiration-locomotion coordination during rehabilitation. This system may facilitate the assessment of therapeutic effects for PD, as well as the patients' health status. This system should satisfy the following requirements: ensure patient comfort through miniature form-factor; low-power operation to allow for an extended period of operation without battery exchange; continuous monitoring of vital signals and autonomous measurement;...



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