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(57) Abstract :

This abstract outline the design, functionalities, and applications of the IoT-based Upper Limb Exoskeleton Suite, highlighting its potential to revolutionize upper limb rehabilitation and assistance. This suite integrates advanced sensor technology, actuators, and IoT connectivity to provide personalized rehabilitation exercises, real-time monitoring, and remote assistance. The exoskeleton suite comprises various components, including sensors for motion tracking, force feedback actuators, a microcontroller unit, a wireless communication module, and a user interface application. Through precise motion tracking and intelligent feedback mechanisms, the exoskeleton assists users in performing rehabilitation exercises, enhances their motor functions, and promotes independence. The IoT connectivity enables data collection for performance analysis, remote monitoring by healthcare professionals, and customization of rehabilitation programs based on individual needs. In rural areas, access to specialized healthcare services, including rehabilitation facilities, can be limited. The application of the IoT-based Upper Limb Exoskeleton Suite holds significant promise for addressing the rehabilitation needs of individuals with upper limb impairments in rural settings.

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