

HAL - Hybrid Assitive Limb by Eric Butkus

The HAL suit offers its users a wide variety of opportunities, if they happen to be crippled or injured. With this device, one could successfully rehabilitate or strengthen their muscles after an accident or other trauma. But mostly, this suit is all about helping people with mobility problems. The suit itself is very light weight and its configured to feel like you are not carrying any extra weigh when you are walking. HAL will cost around 20,000\$, but is certainly worth it, if you are a person who cannot walk due to a debilitating disease or injury.

The suit is powered by a battery pack, which is worn on the belt. The belt also holds the computer system which constantly monitors the user's pattern of motion and posture, and automatically makes adjustments, to ensure comfortability and ease of use. Actuators are located on the system relative to the wearers hips, knees, shoulders and elbows. The suit allows a user to pick up twice as much as they could without the suit, and has a two hour battery life at full load.

HAL is controlled by an intricate system of myoelectric sensors, which sense the brain's electric impulse targeted to a specific muscle group. These sensors pick up the impulses sent to the legs and arms, and react fractionally faster than the own user's muscles. This means that if you were wearing the suit, and you wanted to pick something up that was heavy, just try to pick it up like you normally would, the suit automatically helps out.

The suit has a promising future in the medical field. This is due to the suit's unique calibration software and control modes. For instance, say a person who just suffered a stroke is trying to walk again,

but the control for the left side of the person's body is damaged and needs to be rehabilitated, the suit can compensate for the weakened limbs and gradually lessen the assistance, allowing the user to gradually gain strength in the limb. This suit can quite possibly one day be the foremost tool in physical therapy and in rehabilitation for spinal or stroke injury victims.



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