

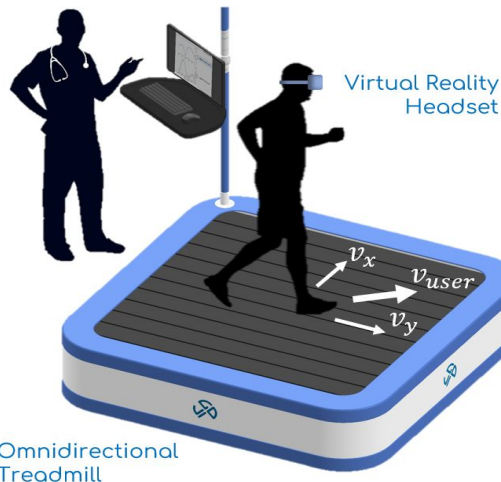


ENHANCING REHABILITATION USING AN OMNIDIRECTIONAL TREADMILL & VR



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CURRENT UNMET NEEDS

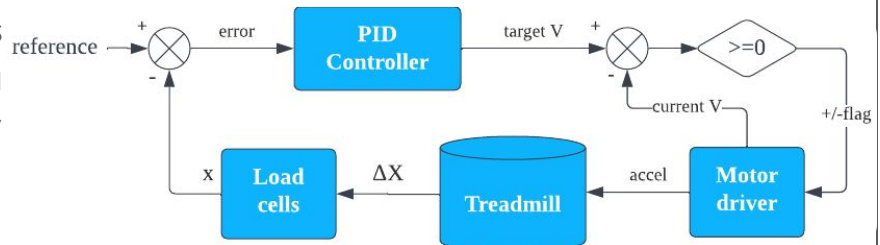
Walking rehabilitation is a common form of treatment for patients suffering from Alzheimer's, Parkinson's, and stroke. However, existing systems and equipment are monotonous and lack the ability to gather quantifiable walking data needed to enhance patient recovery.

VIRTUAL REALITY & AN OMNIDIRECTIONAL TREADMILL

Virtual Reality can help break the monotony of physical therapy, but current VR options tend to cause motion sickness. Our **Omni-Treadmill** addresses this problem by granting patients the ability to move freely in any direction, allowing for complete immersion minus the discomfort. This combination results in more engaged patients who are motivated to undergo more individualized rehabilitation exercises while optimizing their recovery.

REAL-TIME ADAPTIVE FEEDBACK CONTROL

By tracking the center of mass using load cells, we can provide a real-time control loop to actively maintain the user in the center.



KEY PROTOTYPE OBJECTIVES

Seeking to improve previous treadmill prototypes, our team has addressed key areas of concern with our current iteration of the omni-directional treadmill prototype.

- Automatic adjustment based on user's positioning on the treadmill
- Easier assembly experience
- Smaller, more efficient design
- Less noise & vibration
- Handicap/human centered focus