

2017-441 Dextrous hand exoskeleton

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Technology description

SUMMARY

Researchers led by Professor Jacob Rosen from the Department of Mechanical and Aerospace Engineering at UCLA have developed a novel hand exoskeleton that provides sensory information to the user.

BACKGROUND

Sensory feedback from our hands plays a big role in our ability to manipulate objects in our environment. For example, when we touch an egg our hands send sensory information about it to our brain. Our brain then makes sure our hands do not exert too much force to break it. Hand exoskeletons that can provide this sensory feedback to the user will play a huge role in making virtual/augmented reality more realistic and in physical therapy for patients that have suffered movement impairments (e.g. stroke). Current hand exoskeletons are not very flexible in their ability to execute different hand movements nor are they very adjustable to different wearers.

INNOVATION

The exoskeleton can be used to interact with objects in virtual and augmented reality for simulation and therapeutic purposes. Their invention can accommodate a wide range of hand sizes without having to adjust the links or components of the exoskeleton. Unlike other hand exoskeletons, this one is flexible and can be adjusted to accommodate many different hand movements with different finger/thumb groupings that support several therapeutic exercises (e.g. key grasp, pinches, binary flexion and extension).

Application area

- Gaming in virtual or augmented reality
- Simulations in virtual or augmented reality
- Physical therapy in the real world or in virtual reality

Advantages

- Accommodates all hand sizes
- Adjustable to many different finger/thumb combinations
- Supports a wide range of hand movements due to many finger/thumb combinations

Provides sensory feedback for virtual reality applications

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