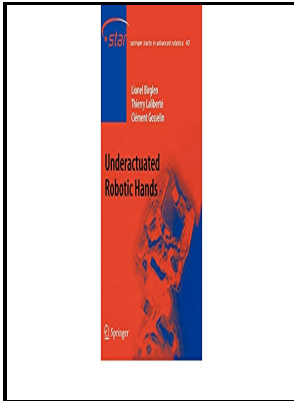


Underactuated robotic hands

Springer - Design and kinematic optimization of a novel underactuated robotic hand exoskeleton



Description: -

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Design and kinematic optimization of a novel underactuated robotic hand exoskeleton

It has the same mobility, but is actuated by only two motors. Aubin P, Sallum H, Walsh C, Stirling L, Correia A 2013 A pediatric robotic thumb exoskeleton for at-home rehabilitation: The isolated orthosis for thumb actuation IOTA. With the introduction of robotics in new applications involving unstructured environments e.

Design and kinematic optimization of a novel underactuated robotic hand exoskeleton

In fact, in contrast with what was previously pointed out in earlier studies, the use of friction, and hence the adjustment, in the design stage, of suitable pulleys 51 and 52 having different frictions with respect to the elements with which they are connected allows for having, at the pulleys 51 and 52, different tension drops on the cable 53, and hence different torques transmitted by the same pulleys 51 and 52 to the first and second elements. These analyses have been used to optimize the link lengths of the mechanism, ensuring that a reasonable range of motion is satisfied while maximizing the force transmission on the finger joints.

Laboratoire de robotique: SARAH hand (underactuated robotic hand for the CANADARM)

Claims 11 wherein at least one of said first pulleys and said second pulleys has a different friction so that said pulleys cause tension drops in said single cable, which are different from one another, and said single cable comprises subtended sectors between said pulleys, which have a non-homogeneous tension, giving different actuation forces to said elements and consequently different mutual rotation speeds between said elements. The single cable 53 advantageously connects all the pulleys 51 and 52 of all the phalanges 3 a and 3 b and, suitably, of the palm 2. In order to allow the robotic hand 1 to replicate the movements of a human hand, the robotic hand 1 comprises a plurality of hinges 4, each of which hinging a first element, coinciding with one of the phalanges 3 a, 3 b, to a second element, coinciding with one among the palm 2 and one of the phalanges 3 a, 3 b different from that forming said first element.

underactuated+robotic+hand

In 1998 the company previously SPAR Aerospace contacted the laboratory in order to request the development of a hand for the well-known. On the other hand, in the case where the rope is pulled from both ends with opposite forces, initially transitional phase, only the ends will move

each of which moves in accordance with the force applied thereto , whereas, in the steady-state phase, the whole rope will move in accordance with the greater of the two forces applied to the ends.

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