

전자석 구동기를 이용한 근육 특성의 정적 추종에 관한 연구

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Simulation of Static Muscle Characteristics using an Electromagnetic Actuator

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Key Words: Electromagnetic actuator(전자석 구동기), Muscle Simulator(근육 모사기)

Abstract : In this paper, a new muscle activation system using the electromagnetic actuator and linear springs was developed for the response of living muscle in a crash dummy and the quasi-static characteristics of the Hill-type muscle model was realized with the proposed muscle activation system experimentally. First, the muscle activation system was designed for a typical longissimus capitis muscle, and then a control system was developed to produce the quasi-static force-length characteristics of the muscle. Then, the muscle elongation system was built using a linear motion table which is driven by a ball screw and a servo motor and the muscle elongation test was performed. The test results showed that the proposed muscle activation system generated the quasi-static force-length characteristics of the Hill-type muscle model very accurately.

구조로봇의 계단 적응성 향상을 위한 트랙 형상화

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Track shape for stairs adaptability improvement of the rescue robot

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Key Words: Rescue robot(구조로봇), Tracked vehicle(트랙형 차량), Rubber-band track(고무 밴드 트랙), Grouser shape(그라우저 형상), Climbing steps(계단 등반)

Abstract : In this paper, we studied the rubber-band track shape of the rescue robot for improving the performance when going up the stairs. Previous researches showed that grousers are modeled into the track for increasing the traction force under severe ground condition. Considering the grouser effect in climbing the stairs, we found that grouser shape is most important because of determining the number of contact point and the width of contact surface. There are 3 cases of contact shape according to grouser shape, attack angle and size of stair. Consequently we found the efficient shape of the grouser by maximizing the traction moment of a rescue robot in the mathematical model.