

상지근력보조를 위한 외골격 메커니즘

개발자: 김기훈

Korea **Institute** of Science
and **Technology**

한국과학기술연구원

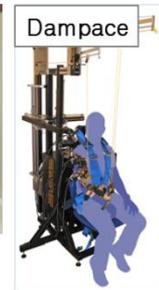
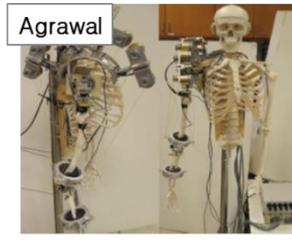
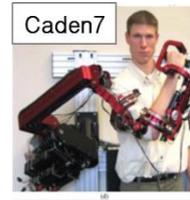
배경기술

상지근력보조를 위한
외골격 메커니즘

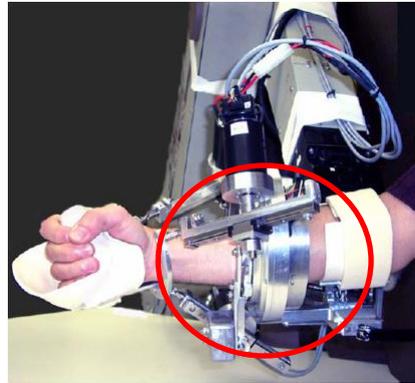
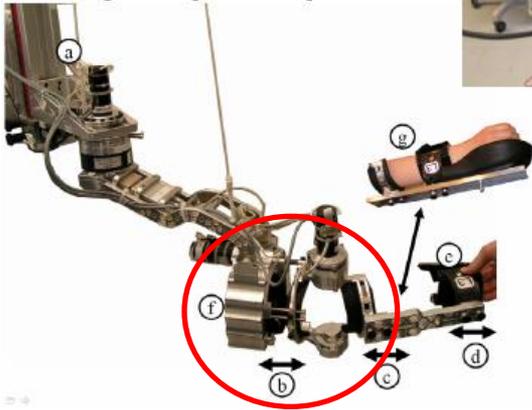
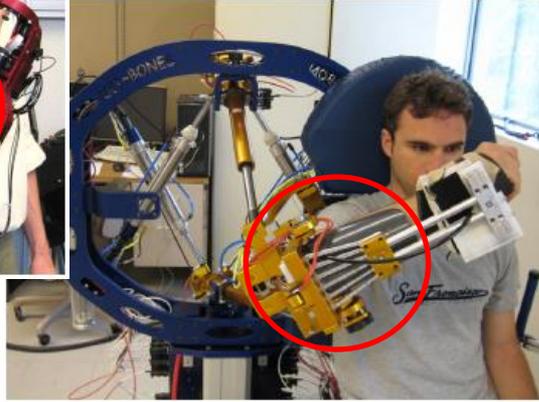
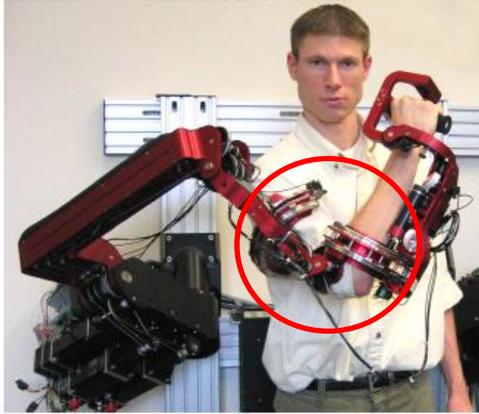
노약자/장애인 근력보조/재활

군사용 근력 증강

산업 현장 근력 증강



배경기술

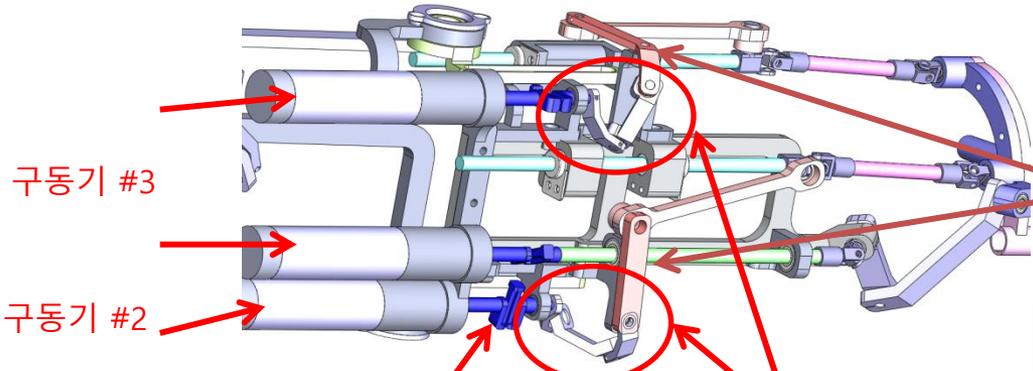


- 병렬형 구조 채택 (고정밀, 고출력)
- 손목의 3자유도 Rotation 구현
- 무게 및 부피 슬림한 디자인

회전축이 인체 내에 있는 경우 (손목, 상박, 어깨 등)
 → 부피가 커지고, 인체 및 주변과 충돌 가능성
 → 안전에 문제점

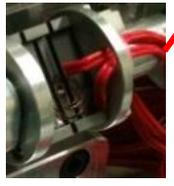
배경기술

외골격 장치의 구성 및 동작 원리



구동기 #3
구동기 #2
구동기 #1

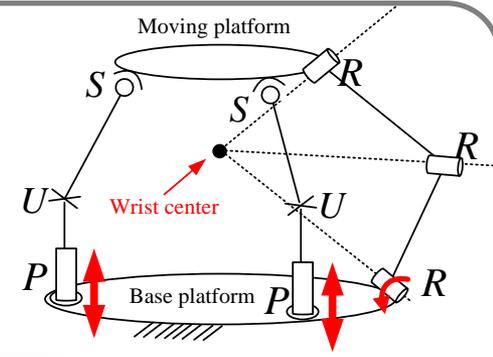
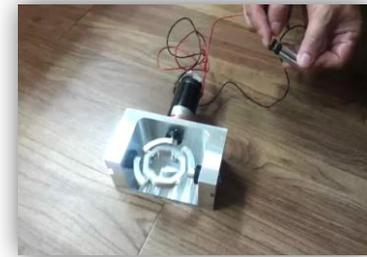
크랭크-슬라이더 링크구조



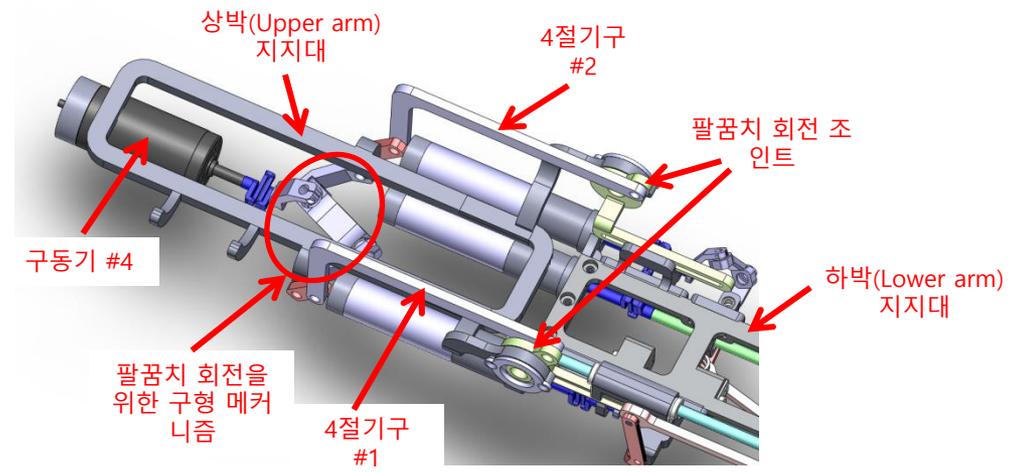
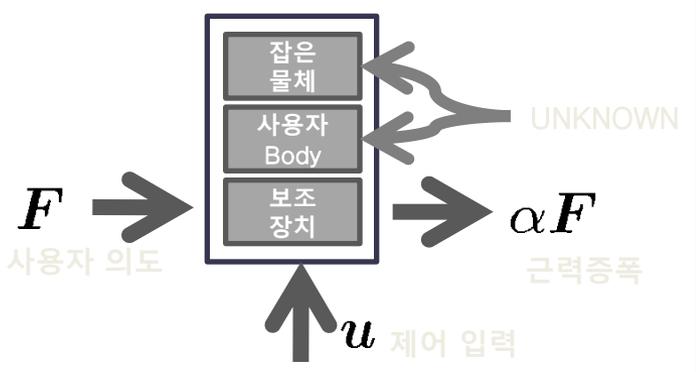
힘센서모듈



Spherical-joint

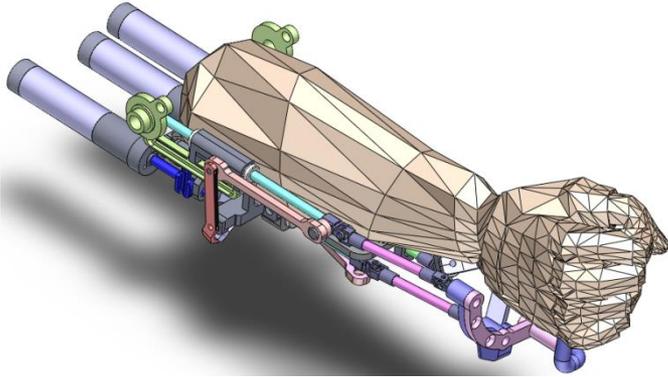


K05800 경사 축 간 회전 동력 전달을 위한 구형 조인트

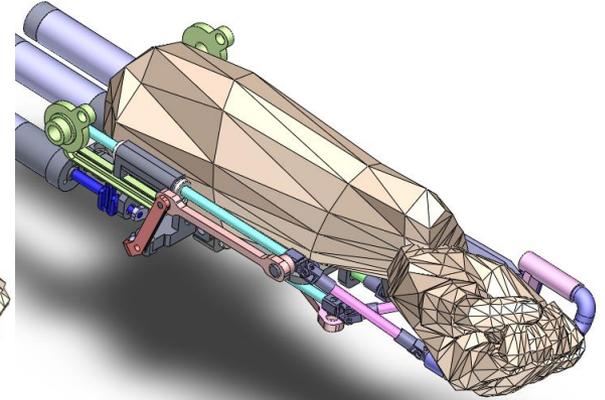
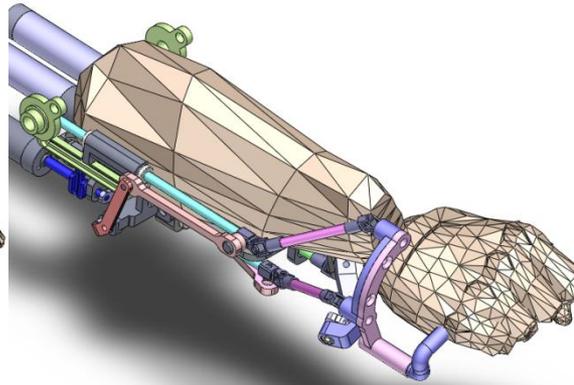


발명의 구성 및 동작

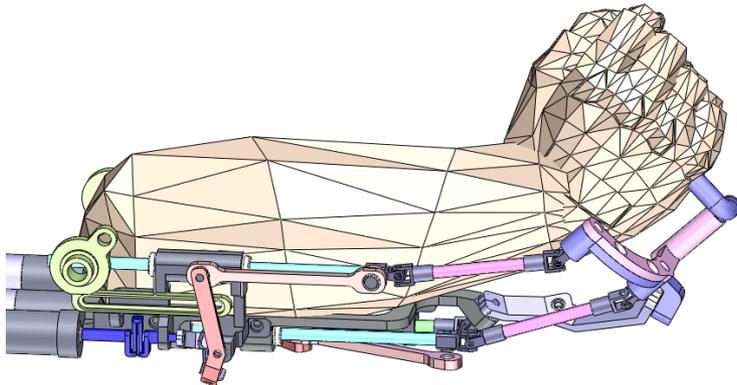
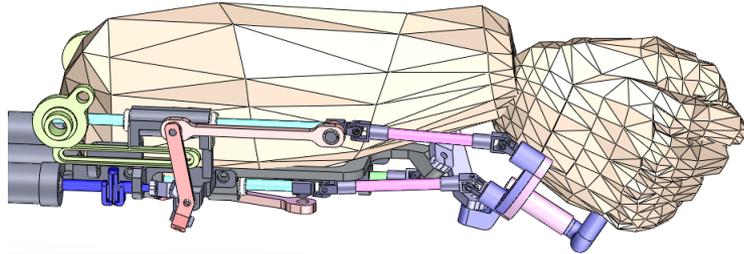
3자유도 손목 회전 운동



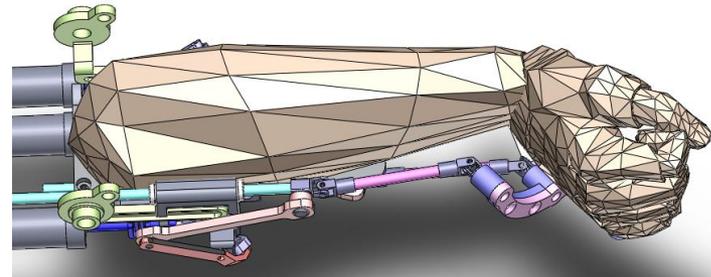
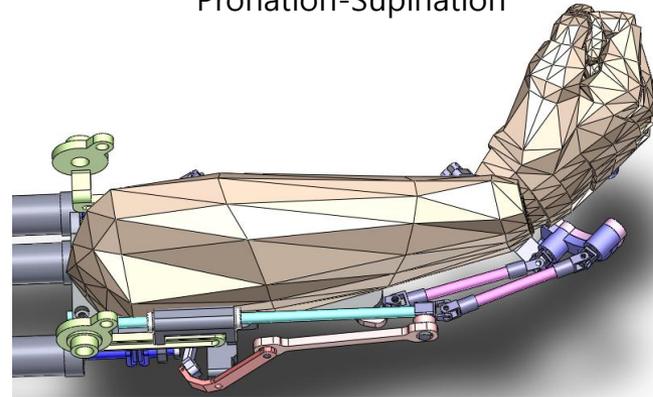
기본자세



Pronation-Supination



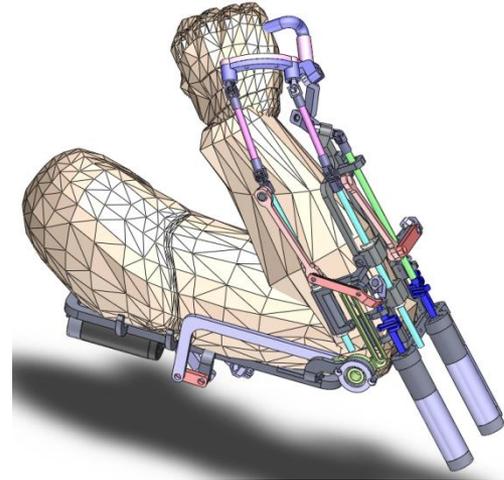
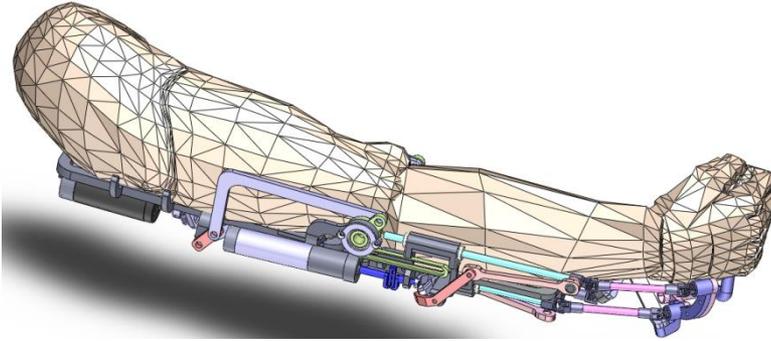
Radial-Ulna Deviation



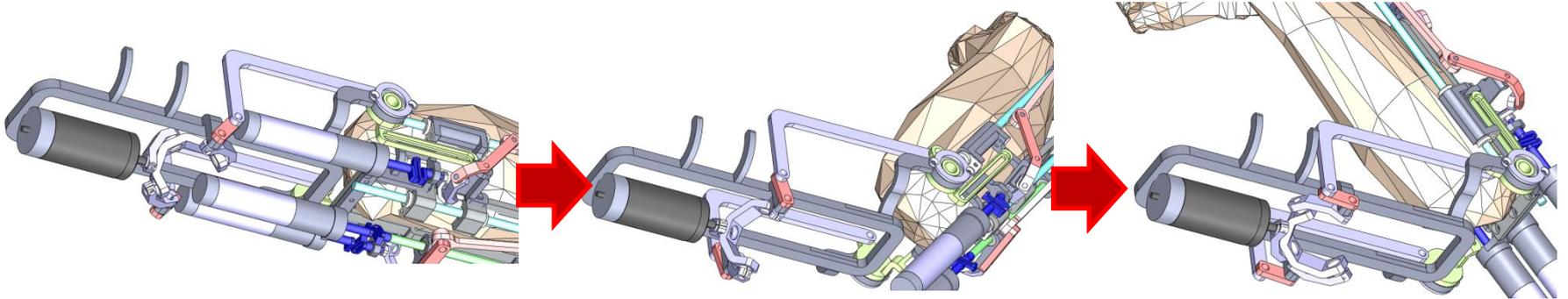
Flexion-Extension

발명의 구성 및 동작

팔꿈치 회전 운동



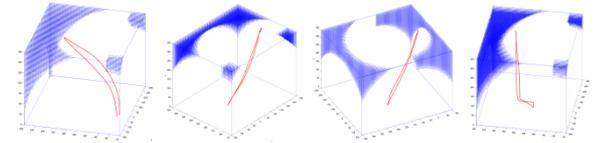
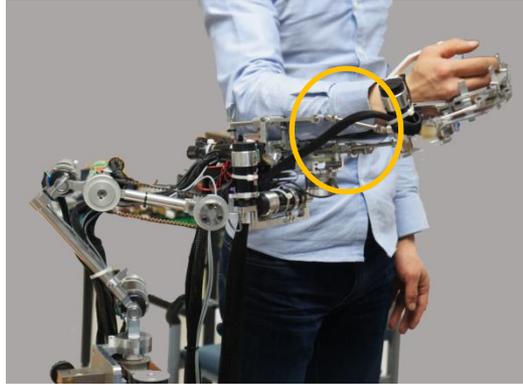
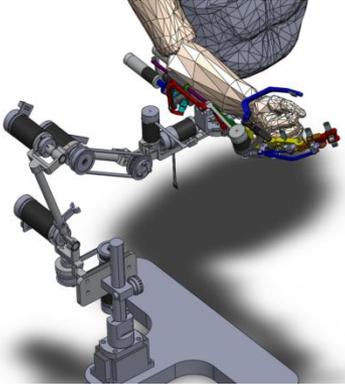
팔꿈치 회전운동



팔꿈치 회전을 위한 메커니즘의 구동 모습

발명의 효과

상지 근력 보조 시스템의 적용에



국립재활원에서 제공된 데이터 중 중간체격 (175cm, 68kg) subject에 대한 4가지 동작 데이터를 기반으로 6자유도 로봇의 작업영역 산정

재활 및 근력 보조 로봇 연구 경쟁 가속화

제안된 메커니즘의 비교 우위

관련 시장에서의 기술 선점 기회

노약자/장애인 근력보조/재활

군사용 근력 증강

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