

We proposed to use the findings derived from the testbed system to scale up to design appropriate control methods and strategies for industrial power assist robotic systems for manipulating heavy/large objects to improve ...

The introduction of Electric Power Assisted Steering (EPAS) system is gradually replacing the conventional steering system in modern cars. The main advantage of EPAS system is the ability to ...

UAV-assisted MEC networks provide extensive communication coverage and massive computation services for mobile terminals (MTs), which are considered a promising edge paradigm to support future air-ground integrated communications. In this paper, an energy-efficient scheme in NOMA-based UAV-assisted MEC systems is proposed to address the ...

In this paper we formulate the problem of designing guides to effectively assist the human, and we apply the formulation to two types of materials handling tasks: pushing a heavy cart and single ...

Finally, it was proposed to use the findings to design power assist systems for lifting heavy objects in industries such as manufacturing, logistics, transport, construction, military and rescue ...

Effectively controlling active power-assist lower-limb exoskeletons in a human-in-the-loop manner poses a substantial challenge, demanding an approach that ensures wearer autonomy while seamlessly adapting to diverse wearer needs. This paper introduces a novel hierarchical control scheme comprising five integral components: intention recognition layer, ...

2011 50th IEEE Conference on Decision and Control and European Control Conference (CDC-ECC) Orlando, FL, USA, December 12-15, 2011 Control of an Electric Power Assisted Steering System Using Reference Model A. Marouf, C. Sentouh, M. Djemaï and P. Pudlo Abstract-- This paper presents a new control strategy of Electric Power Assisted Steering (EPAS) systems to ...

Gears can generate noise and vibration, which can affect the performance and comfort of mechanical systems. Proper design and alignment, as well as the use of damping materials, can help reduce noise and vibration. ... Gears are a cornerstone of mechanical engineering, playing a vital role in the transmission of power and motion in a wide range ...

In response to these challenges, this paper introduces a novel control framework for power-assistant exoskeleton robots, encompassing an intention recognition layer, a dynamics ...

Transform your manual wheelchair into a power chair with the SD Motion Assist add-on electric propulsion system. Programmed to suit your individual strength, the motion assist system has two speeds and is perfect

for providing a little extra strength without the need to transfer to a fully-powered wheelchair. ... compact design which can be ...

The elements used in power steering is a hydraulic pump, fluid reservoir, hoses, lines; and either a power assist unit mounted on or integral with, a power steering gear assembly. Whereas manual steering has a steering wheel and column, a manual gearbox and rack & pinion assembly, steering knuckles and ball joints, and the wheel spindle assemblies.

This paper describes the mechanism and control method of this power assist system. The pneumatic rotary actuator supports shoulder motion, and the air cylinder supports elbow ...

elbow actuator to assist flexion-extension motion, a forearm actuator to assist supination-pronation motion, and a T-mechanism. It is essential in prosthesis design to keep the limb motion similar to the normal human limb after the arthroplasty. In normal human elbow complex, the radius bone of the human forearm rotates and crosses over the ulna

Design and Simulation of Electrical Power Assisted Four Wheel Steering System 2024 In a paper of Y oung-Eun Ko and Chul Ki Song examined the importanc e of vehicle stability in the

We then proposed using the results to design control methods for power assist robotic systems for handling large and heavy materials and objects in various industries, which may improve human-robot interactions (HRIs) and system performance. ... We designed and built a 1-DoF (vertical lifting motion) power assist system using a ball screw, ...

This paper reports a newly designed system intended to aid in hand rehabilitation. The motion assistance equipment consists of three parts: mechanisms for the fingers and thumb, a base of these ...

This study is focused on structural design of an active power-assist lower limb (APAL) exoskeleton which can support random motion of human lower limbs. We intend to ...

be implemented simultaneously and in sequence using a motion profile. As the material moves through the system, the motion controllers may shift on-the-fly from position control to pressure control to velocity control, and each shift must occur smoothly in order to avoid material or machine damage. Designing the motion control system

Design with 3D Motion Prediction Topology Luping Xiang, Member, IEEE, Ke Xu, Student Member, IEEE, Jie Hu, Senior Member, IEEE, Christos Masouros, ... problem involving non-orthogonal power allocation in OTFS-ISAC systems. Simulation results demonstrate the ... II. OTFS-ISAC system assisted by NOMA The NOMA-assisted OTFS-ISAC network is shown ...

Impairments of fingers, wrist, and hand forearm result in significant hand movement deficiencies and daily task performance. Most of the existing rehabilitation assistive robots mainly focus on either the wrist training or fingers, and they are limiting the natural motion; many mechanical parts associated with the patient's arms, heavy and expensive. This paper ...

Disadvantages of Power Steering System. The power steering system has a high cost because it consists of various components such as a steering pump, shaft, steering wheel, pitman's arm, and steering column, etc., due to that, its cost increases. It has a complex design. The maintenance of the power steering system is very complicated.

In this paper, the mechanical design and control strategy for a parallel hip joint assistive robot are proposed. The mechanical design is based on a 3-UPS parallel structure. ...

A power-assisted wheelchair (PAW) consists of a manual wheelchair (MWC) and electric power add-ons (e.g., powered-wheels and/or front-/rear-end attachments) that connect to the wheelchair's frame. ... "Performance assessment of a pushrim-activated power-assisted wheelchair control system," IEEE Trans. Control Syst. Technol., 2002 10(1 ...

Alber offers a wide selection of power assist devices. With the launch of our new award-winning power assist device the SMOOV and our next generation e-motion the M25, you truly have the freedom to choose your power. Our products are proudly manufactured in Germany and distributed out of our U.S. office near Pittsburgh PA.

Hydraulic systems may use a variety of fluids-- ranging from water (with or without additives) to high-temperature fire-resistant types. Again the fluid is different but the operating characteristics change little. Pneumatic systems. Most pneumatic circuits run at low power -- usually around 2 to 3 horsepower.

end, surgeons are now using robots or motor-assist tools to boost accuracy. Even risky forms of eye and brain surgery now rely on ... efficient and power dense as well. CAVEAT ON MOTION-INDUSTRY TERMINOLOGY The motion-control industry (like any) has its own system of ... NANOPositioning AND MINIATURE MOTION SYSTEMS DESIGN.

alber e-fix Power Assist. Turn your manual wheelchair into a compact electric wheelchair with the e-fix add-on drive. The drive can be individually programmed and can therefore be adapted perfectly to your personal needs. The electric add-on drive is the simple way to increase your freedom of movement.

DOI: 10.1109/M2VIP.2016.7827270 Corpus ID: 28629614; Design of the power-assisted hip exoskeleton robot with hydraulic servo rotary drive @article{Yang2016DesignOT, title={Design of the power-assisted hip exoskeleton robot with hydraulic servo rotary drive}, author={Mingxing Yang and Qing Zhu and Ruru Xi and Xingsong Wang and Yali Han}, journal={2016 23rd ...

This paper presents a new control strategy of Electric Power Assisted Steering (EPAS) systems to ensure several control objectives. First, a reference model is employed to generate ideal motor ...

Architecture for V2X-assisted co-design of motion planning and control system. Following this initial phase, planning procedures unfold in two stages: pre-planning and online-planning. The pre-planning stage optimally utilizes the computational and storage capabilities of RSUs to generate a spectrum of candidate trajectories, refining feasible ...

In the system proposed, the hydraulic subsystem stores energy to be used for propulsion and to power the air compressor, while the pneumatic system stores energy to power auxiliaries. The main aim of the system is to achieve reasonable recovery of braking energy during downward slope motion, while still operating with high efficiency at full stop.

In order to investigate the reaction force characteristic of the acceleration pedal, an ankle power-assist system which is able to assist the pedal operation of the car driver based on ...

In order to improve the lateral stability and handling performance of in-wheel motor drive electric vehicles, a coordinated control method considering lateral stability and differential power-assisted steering performance is proposed. A vehicle dynamics model with two degrees of freedom is established, in which the influence of system disturbance is considered. At the ...

As EPAS (electric power assisted steering) systems have been developed and refined however, manufacturers like Porsche have managed to create electronic systems that all but match the feel of a ...

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