OPERARIO SENSORIZADO Y ROBÓTICA COLABORATIVA

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SECCIÓN I. OPERARIO SENSORIZADO

NOTICIAS

08/04/2022

Fabricación digital en el sector aeroespacial

La industria aeroespacial se enfrenta a unos desafíos únicos en el terreno de la fabricación. La complejidad de las formas y estructuras de los componentes, junto con las diferentes tolerancias que precisan los distintos componentes, pueden traducirse en un proceso de producción exigente y costoso. Las características del sector aeroespacial —y sus estrictas normas de garantía de calidad— también implican que no hay lugar para los errores en la producción de componentes. Para optimizar la fabricación, es absolutamente esencial una planificación y preparación adecuadas basadas en datos precisos y fiables. Para apoyar a los OEM del sector aeroespacial, Sandvik Coromant ofrece varias soluciones diseñadas para mejorar los procesos de mecanizado y garantizar la calidad y la fiabilidad de los componentes.

https://www.interempresas.net/Aeronautica/Articulos/385750-Fabricacion-digital-en-el-sector-aeroespacial.html

26/04/2022

Aertec, la UMA y Telefónica Tech desarrollan un software basado en tecnología Blockchain para la industria aeronáutica

El área de Digitalización Industrial de Aertec, compañía internacional especializada en tecnología aeroespacial, la Universidad de Málaga y Telefónica Tech han desarrollado conjuntamente un proyecto de software

basado en tecnología Blockchain y de aplicación a la industria aeronáutica.

El proyecto hace uso de las capacidades de trazabilidad y certificación de TrustOS, el servicio de Blockchain gestionado de Telefónica Tech. Gracias a la utilización de este servicio, el equipo del proyecto ha podido enfocarse en la problemática particular relacionada con los test funcionales mientras incorporaba todos los beneficios de inmutabilidad y transparencia inherentes a la tecnología Blockchain abstrayéndose de la complejidad de desarrollar los componentes necesarios para registrar la información recogida por los sensores, como los conectores adecuados con la red, los Smart Contracts que registran la información.

https://actualidadaeroespacial.com/aertec-la-uma-y-telefonica-tech-desarrollan-un-software-basado-en-tecnologia-blockchain-para-la-industria-aeronautica/

15/04/2022

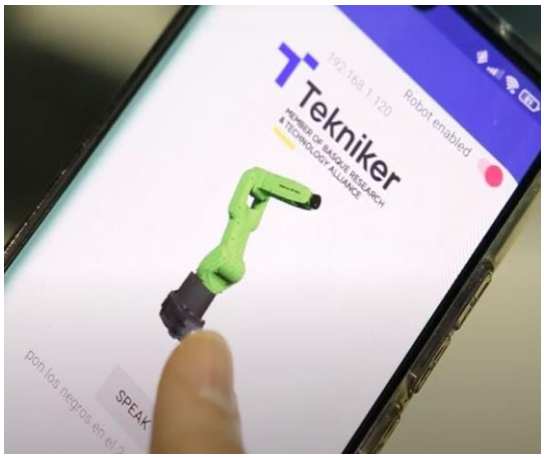
UR+ ecosystem adds VR solutions to teleoperate cobots

Universal Robots added Extend Robotics' Advanced Mechanical Assistance System (AMAS) to its UR+ ecosystem, a collection of more than 340 certified kits, components, grippers, software and safety accessories that integrate with the company's collaborative robots (cobots). AMAS lets users control robotic arms remotely from anywhere in the world. The system works with user-friendly technology like Oculus and StreamVR, making it accessible to non-technical users. The virtual reality devices create 3D environments, which give users full depth perception. The equipment allows for easier controls using arm-and-hand gestures.

https://www.cobottrends.com/ur-plus-ecosystem-virtual-reality-teleoperate-cobots/

Tekniker en BIEMH - Interacción entre persona y máquina a través de palabras o gestos

El centro tecnológico Tekniker presentará en la próxima BIEMH sus últimos avances en inteligencia artificial para facilitar la interacción entre persona y máquina a través de palabras o gestos. La tecnología desarrollada por Tekniker se podrá probar in situ en la feria internacional a través de un demostrador que consiste en una célula robótica colaborativa para aplicaciones industriales de bin picking. La solución basada en inteligencia artificial del centro tecnológico permitirá al usuario del sistema automatizado seleccionar un objeto a elegir entre media docena de posibilidades y mediante comandos de voz/gestos indicará dónde desea depositar dicho objeto. El prototipo integrará además visión artificial.



https://www.infoplc.net/noticias/item/111293-tekniker-biemh-interaccion-entre-persona-maquina-a-traves-palabras-gestos

PUBLICACIONES CIENTÍFICAS

Mayo/2022

Exoskeletons for workers: A case series study in an enclosures production line

Ilaria Pacifico, Andrea Parri, Silverio Taglione, Angelo Maria Sabatini, Francesco Saverio Violante, Franco Molteni, Francesco Giovacchini, Nicola Vitiello, Simona Crea

This case-series study aims to investigate the effects of a passive shoulder support exoskeleton on experienced workers during their regular work shifts in an enclosures production site. Experimental activities included three sessions, two of which were conducted in-field (namely, at two workstations of the painting line, where panels were mounted and dismounted from the line; each session involved three participants), and one session was carried out in a realistic simulated environment (namely, the workstations were recreated in a laboratory; this session involved four participants). The effect of the exoskeleton was evaluated through electromyographic activity and perceived effort. After in-field sessions, device usability and user acceptance were also assessed. Data were reported individually for each participant. Results showed that the use of the exoskeleton reduced the total shoulder muscular activity compared to normal working conditions, in all subjects and experimental sessions. Similarly, the use of the exoskeleton resulted in reductions of the perceived effort in the shoulder, arm, and lower back. Overall, participants indicated high usability and acceptance of the device. This case series invites larger validation studies, also in diverse operational contexts.

https://www.sciencedirect.com/science/article/abs/pii/S0003687022000023

Mayo/2022

Parameters of effects in decision making of automotive assembly line using the Analytical Hierarchy Process method

Nelfiyanti, Nik Mohamed, MFFA Rashid, Anwar Ilmar Ramadhan

The automotive industry contributes high income to most of the countries. The assembly line is an essential part of the automotive industry because it combines all the components into a complete body unit. Assembly lines often experience delays in meeting production targets, requiring overtime to complete. Musculoskeletal Disorder (MSD) complaints among assembly workers predominantly lie in trimming, chassis, and finishing processes. Improvements are needed to reduce complaints according to the priority process. This study aims to prioritize the process on the assembly line with the parameters of work position, workload, work layout and equipment. This study implements the Analytical Hierarchy Process (AHP) method to achieve the objectives of the decision-making process. Preliminary weighting priorities for chassis, finishing and trimming are 0.6153,

0.2313 and 0.1533; respectively highest weight is in the chassis process and will be a priority for this study in optimizing solutions.

https://www.sciencedirect.com/science/article/abs/pii/S1755581722000438

Junio/2022

Human-robot mobile co-manipulation of flexible objects by fusing wrench and skeleton tracking data

David De Scheppera, Gert Schouterden, Karel Kellens, Eric Demeester

Over the past decades, robots have been extensively deployed in multiple industries. More recently, industrial robots have been taken out of their cages, being more present in dynamic environments, interacting in the close vicinity of human operators. Traditionally, robots have been mainly developed to perform pre-programmed tasks. However, some tasks are too complex or expensive to be performed by a robotic system alone. Examples are the handling of large sheet-like objects in the composite part production or plastic film wrapping industry. This work presents a hybrid wrench and vision reactive control approach towards the handling of large (non-)rigid materials. The presented approach fuses force-torque data and skeleton tracking to control a mobile manipulator in an intuitive manner, by using the intelligence of the operator as much as possible. Using this approach, tools such as path planning, or object modelling are not essential to obtain the results. The hybrid controller is subject to stability experiments where the controller responses are monitored when the mobile manipulator is subject to a step and sinusoidal function as input. Lastly, the overall approach is illustrated with a proof-of-concept task in which a flexible sheet is handled by a mobile manipulator and human operator together.

https://www.tandfonline.com/doi/abs/10.1080/0951192X.2022.2081362

SECCIÓN II. ROBÓTICA COLABORATIVA

NOTICIAS

01/04/2022

Séptimo eje para robots de igus amplía su alcance hasta un 400%

Los brazos robóticos articulados pueden desplazarse hasta más de seis metros y cuadruplicar su espacio de trabajo con el 7o eje de igus, que ahora es compatible con todos los robots ligeros gracias a un sencillo kit "Plug & Play". Grandes fabricantes como Universal Robots, Epson y la serie robolink de igus ya se han beneficiado de este incremento en la movilidad. Ahora se suman a la lista Omron, Franka Emika, Doosan, Yuanda Robotics y muchos otros proveedores de robótica ligera. Los primeros usuarios del llamado 7o eje lineal, un módulo lineal de correa dentada con accionamiento eléctrico que igus lanzó en el verano de 2020, estan encantados: «Gracias al eje adicional, sus robots de brazo articulado tienen el mismo rango de movimientos que los humanos

https://www.infoplc.net/noticias/item/111071-septimo-eje-para-robots-igus-amplia-su-alcance-hasta-un-400

04/04/2022

Kinova Robotics launches Link 6 cobot arm

Link 6 is Canada's first industrial collaborative robot, featuring automation solutions that enable greater daily efficiency while improving the quality and consistency of production results. Achieving short cycle times through longer reach and fast movements, the Link 6 robotic arm is developed and designed with any user in mind, both for experienced industrial integrators and operators with no particular robotic skills. Link 6 is Canada's first industrial collaborative robot, featuring automation solutions that enable greater daily efficiency while improving the quality and consistency of production results. Achieving short cycle times through longer reach and fast movements, the Link 6 robotic arm is developed and designed with any user in mind.

https://www.cobottrends.com/kinova-robotics-launches-link-6-cobot-arm/

13/05/2022

La ingeniería de precisión, elemento indispensable en el desarrollo de máquina-herramienta

La mejora de la precisión en máquina-herramienta es un objetivo clave para fabricantes y usuarios (desarrollo y utilización de las máquinas y sistemas productivos) para asegurar el cumplimiento de las especificaciones de los productos a fabricar. La medida en máquina y la fabricación cero defectos son algunos de los conceptos que se están desarrollando a nivel de investigación para su posterior aplicación en máquina-herramienta y conseguir así una precisión cada vez mayor incluso en piezas de mayor tamaño.

La ingeniería de precisión se puede considerar como aquella ingeniería orientada al diseño y desarrollo de máquinas, equipos y

productos siguiendo unos principios básicos orientados a priorizar la precisión sobre cualquier otro requisito.

Desde sus inicios, Tekniker ha incluido la ingeniería de precisión como una de sus líneas de especialización y la ha puesto en práctica en el desarrollo de diversos equipos y sistemas como máquinas especiales de medida, instrumentación científica, equipos de ensayo, componentes de optoelectrónica, patrones de medida, etc.

https://www.interempresas.net/Aeronautica/Articulos/388968-La-ingenieria-de-precision-elemento-indispensable-en-el-desarrollo-de-maquina-herramienta.html

1/05/2022

Festo Cobot - El primer cobot neumático

FESTO ha presentado hoy su nuevo Festo Cobot, el primer cobot neumático del mundo. Festo Cobot debe muchas de sus ventajas, como su sensibilidad, peso y relación calidad-precio, a los beneficios de la neumática. Los accionamientos directos en las juntas articuladas son muy rentables y especialmente ligeros porque, a diferencia de las soluciones eléctricas, no se necesitan reductores pesados ni costosos sensores de fuerza-par. El primer cobot neumático del mundo es el resultado de la excepcional experiencia en neumática controlada de Festo. El Festo Cobot neumático será más económico que los cobots eléctricos de la misma clase.

https://www.infoplc.net/noticias/item/111219-festo-cobot-primer-cobot-neumatico

PUBLICACIONES CIENTÍFICAS

Abril/2022

Inspection Application in an Industrial Environment with Collaborative Robots

Eliana Giovannitti, Sayyidshahab Nabavi, Giovanni Squillero & Alberto Tonda

Gear backlash is a quite serious problem in industrial robots, it causes vibrations and impairs the robot positioning accuracy. Backlash estimation allows targeted maintenance interventions, preserving robot performances and avoiding unforeseen equipment breakdowns. However, a direct measure of the backlash is hard to obtain, and dedicated auxiliary sensors are required for the measurement. This paper presents a method for estimating backlash in robotic joints that does not require the installation of extra devices. It only relies on data gathered from the motor encoder, which is always present in a robotic joint. The approach is based on the observation of a characteristic vibration pattern arising on the motor speed signal when backlash affects the joint transmission. By looking at the amplitude of this vibration some information about the entity of the backlash in the joint is gathered. Experimental results on simulated data are reported in the study to show the robustness of the method, also with respect of noise. Furthermore, tests on real-world data, gathered from robots installed in a production plant, demonstrate the efficacy of the technique. The approach is cost-effective, fast, and easily automatable, therefore convenient for the industrial world.

https://link.springer.com/article/10.1007/s10845-022-01934-z

Mayo/ 2022

The Influence of Collaborative Robots on the Quality, Efficiency and Effectiveness of Automotive Manufacturing Flows

Aurel Mihail Titu, Vasile Gusan

These days, industrial organizations are looking for multiple solutions so that they remain flexible and competitive in the market. This situation leads directly to the improvement of manufacturing flows by automation or their robotization. Quality, efficiency, and effectiveness are important aspects that any organization must take into account in order to remain competitive. Thus, the manufacturing processes with collaborative robots are becoming more and more common in the industry. This aspect is due not only to the lack of staff, but also to the multiple advantages collaborative robot bring. The current pandemic context further favors the implementation of these types of robots. Collaborative robots are becoming more and more a necessity today, due to the fact that they can easily mold to the process and improve it from several points of view. Collaborative robots bring an important impact in terms of quality, efficiency and

effectiveness of manufacturing flows. The scientific paper presents in an elegant way the effect that collaborative robots bring, following the integration, on the manufacturing flows in automotive.

https://link.springer.com/chapter/10.1007/978-3-031-05230-9_6

Junio /2022

Novel Approach Using Risk Analysis Component to Continuously Update Collaborative Robotics Applications in the Smart, Connected Factory Model

Matteo Pantano, Yurii Pavlovskyi, Erik Schulenburg, Konstantinos Traganos, Seyedamir Ahmadi, Daniel Regulin, Dongheui Lee, José Saenz

Building on the idea of Industry 4.0, new models of the highly connected factory that leverage factory-generated data to introduce cost-effective automation and involve the human worker for creating higher added value are possible. Within this context, collaborative robots are becoming more common in industry. However, promises regarding flexibility cannot be satisfied due to the challenging process of ensuring human safety. This is because current regulations and standards require updates to the risk assessment for every change to the robotic application, including the parts involved, the robotic components, and the type of interaction within the workspace. This work presents a novel risk analysis software tool that was developed to support change management for adaptive collaborative robotic systems in the connected factory model. The main innovation of this work is the tool's ability to automatically identify where changes have been made to components or processes within a specific application through its integration with a connected factory architecture. This allows a safety expert to easily see where updates to the risk assessment are required, helping them to maintain conformity with the CE marking process despite frequent changes. To evaluate the benefits of this tool, a user study was performed with an exemplary use-case from the SHOP4CF project. The results show that this newly developed technology for risk assessment has better usability and lower omission errors when compared to existing methods. Therefore, this study underlines the need for tools that can help safety engineers cope with changes in flexible robotics applications and reduce omission errors.

https://www.mdpi.com/2076-3417/12/11/5639

SECCIÓN III. EVENTOS INDUSTRIA 4.0

IoT Solutions World Congress

10-12 mayo 2022, Barcelona

Welcome to the "New Normal" "Next IOTSWC 2021", an event that showcases the game-changing solutions & technologies that are disrupting and transforming industry and celebrates the business and technology executives creating a powerful competitive advantage. IOTSWC 2021 is where leaders, across the organization, learn to navigate what's next. Main activities: Testbeds, Startup Competition, Side Events, Executive Talent Program, Networking Sessions Room, Workshops, Brokerage Event, Networking Creating Synergies.

https://www.iotsworldcongress.com/

Global Industrie 2022

17-20 mayo 2022, París Nord Villepinte (Francia)

Global Industrie tendrá lugar del 17 al 20 de mayo de 2022 en París Nord Villepinte. Global Industrie 2022 es un evento de referencia para el sector industrial. Cubrirá a toda la industria y le permitirá descubrir todas las soluciones,

tecnologías, servicios y conocimientos técnicos que necesita para la industria de hoy y mañana. Esta feria se celebrará del 17 al 20 de mayo de 2022 en el recinto París Nord Villepinte. Global Industrie 2022 acoge cuatro salones en su interior: MIDEST, SMART INDUSTRIES, INDUSTRIE, TOLEXPO.

https://global-industrie.com/fr

IOT Week

20-23 junio 2022, Dublín (Irlanda)

Uncovering the Impact of AI, blockchain, quantum computing, AR/VR, Robotics, and new digital innovations. In a new Post-COVID era, IoT is accelerating and facilitating the new trends such as home working, new mobility challenges and the digitalization of the economy. At the edition of the IoT Week in Dublin 2022, we want to invite you to discover its impact on Artificial Intelligence, blockchain, quantum computing, AR/VR, Robotics, and new digital innovations. The future of IOT will undoubtedly create positive evolution to all sectors of activity, improving the way we live and work in a safer and more sustainable way. Let's join us next June to share your expertise and the next wave of tech innovation.

https://iotweek.org/

BIEMH 2022

13-17 junio 2022, Bilbao

La próxima edición de la Bienal Internacional de Máquina Herramienta se celebrará en BEC del 13 al 17 de junio de 2022. En BIEMH 2022 estarán representados los siguientes sectores: máquinas-herramienta (por arranque y deformación), otras máquinas (soldadura, oxicorte y tratamiento de superficies), herramientas para máquinas-herramienta, piezas, componentes y accesorios, automatización de los sistemas de producción, metrología y control de calidad y servicios. En esta feria nos podremos encontrar con las últimas novedades del sector.

https://biemh.bilbaoexhibitioncentre.com/

Automatica 2022

21 - 24 junio 2022, Munich (Alemania)

After its successful premiere as part of the digital automatica sprint format in 2021, the munich_i high-tech summit will start its second round on Wednesday, June 22, 2022. 17 renowned figures from AI and robotics will discuss their visions, innovations, findings, and theories in the Conference Center Nord at Messe München. To provide us as a society with a clear-sighted outlook to the future. Business leaders and scientists from Europe, North America and Singapore discuss groundbreaking solutions and latest research findings that will change our lives forever. Whether warehouse automation, deep learning approaches for smart robots and automated driving, or soft robotics: With its four sessions and a closing presentation, the munich_i Hightech Summit 2022 offers a wide range of topics and insights.

https://automatica-munich.com/en/trade-fair/munich-i/summit/

European Robotics Forum

28-30 junio 2022, Rotterdam (Países Bajos)

It is with great pleasure that we welcome you to the European Robotics Forum 2022 in one modern, easily reachable, spectacular city: Rotterdam, the Netherlands. The European Robotics Forum 2022 (ERF2022), the most influential meeting of the robotics community in Europe, will be held from 28 – 30 June in Rotterdam, The Netherlands. The ERF2022 covers all aspects and current themes related to the field of robtics. Researchers, engineers, managers, and a growing number of entrepreneurs, businesspeople, and public funding officers from all over Europe come together to discuss technology push and market pull and how innovation in robotics and robotics-related AI can be accelerated.

https://erf2022.eu/