OPERARIO SENSORIZADO Y ROBÓTICA COLABORATIVA

BOLETÍN DE VIGILANCIA TECNOLÓGICA.
ENERO-MARZO 2021. **CTAG**

ÍNDICE

SECCIÓN I. OPERARIO SENSORIZADO

NOTICIAS

08/01/2021

Audi fabrica el e-tron GT sin haber utilizado prototipos físicos

El Audi e-tron GT es el primer modelo de este constructor englobado en el Grupo Volkswagen, cuya producción se ha planificado íntegramente sin prototipos físicos. Fuentes del fabricante subrayan que múltiples innovaciones técnicas lo han hecho posible, incluyendo escaneos tridimensionales de edificios, procesos de aprendizaje de máquina y el uso de la realidad virtual (RV). Todos los procesos de montaje, al igual que los procedimientos y las acciones de los operarios, se probaron y optimizaron en espacios virtuales que replican a sus homólogos del mundo real hasta el más mínimo detalle.

Audi fabrica el e-tron GT sin haber utilizado prototipos físicos (auto-revista.com)

18/01/2021

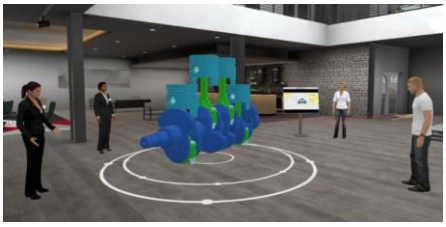
Sistema de visión In-Sight 3D-L4000 de Cognex

Cognex presenta el sistema de visión integrado In-Sight® 3D-L4000 una cámara inteligente que permite a los ingenieros resolver de forma rápida, precisa y rentable una serie de inspecciones en líneas de producción automatizadas. Con esta tecnología el In-Sight 3D-L4000 rompe las barreras anteriores al proporcionar un conjunto masivo de verdaderas herramientas de visión en 3D y hacerlas tan fáciles de utilizar como las herramientas de visión 2D de In-Sight líderes en la industria.

Sistema de visión In-Sight 3D-L4000 de Cognex - infoPLC

27/01/2021

Audi crea un mundo virtual "para aprender y trabajar



Audi ha desarrollado y puesto en marcha un mundo virtual en 3D para aprender y trabajar. Con la herramienta digital denominada Audi Spaces, los empleados pueden interaccionar desde sus ordenadores de formas muy variadas: como herramienta para el aprendizaje y la formación, como medio de coaching y consultoría, y para la colaboración y la comunicación digital. La Audi Akademie asegura que el nuevo software que ofrece una solución innovadora con mundos 3D interactivos crea muchas posibilidades para los medios y la interacción social.

Audi crea un mundo virtual "para aprender y trabajar" (auto-revista.com)

15/02/2021

Comau Validates Machine Learning Platform

Comau will leverage its culture of innovation when collaborating with other key players as part of the MUSKETEER pan-European consortium. The project aims to alleviate data sharing barriers by providing secure, scalable, encrypted analytics over decentralized datasets using machine learning. In this context, Comau, tasked with reinforcing and validating dedicated machine learning modules in the field of robotics, has completed the first test case with decidedly positive results. The test case was based on a machine learning module featuring two Comau manufacturing datasets that had been privacy-protected and could therefore be exchanged on the MUSKETEER cloud platform without the need to share confidential data.

https://metrology.news/comau-validates-machine-learning-platform/

PUBLICACIONES CIENTÍFICAS

Enero/2021

Designing human–system cooperation in industry 4.0 with cognitive work analysis: a first evaluation

Marie-Pierre Pacaux-Lemoine, Quentin Berdal, Clément Guérin, Philippe Rauffet, Christine Chauvin & Damien Trentesaux

One objective of Industry 4.0 is to reach a better system performance as well as to have a better consideration of humans. This would be done by benefiting from knowledge and experience of humans and balancing in a reactive way some complex or complicated tasks with intelligent systems. Several studies already dealt with such an objective, but few are done at a methodological level, which forbids, for example, the correct evaluation of design choices in terms of human awareness of the situation or mental workload when designing intelligent manufacturing systems integrating the human. Indeed, increasing the intelligence and autonomy of industrial systems and their composing entities (resources, products, robots…), as fostered by Industry 4.0, increases their overall complexity. This modification reduces the ability to understand the behaviours of these systems and leads to the difficulty for humans not only to elaborate alternative decisions when required, but also to make effective decisions and understand their consequences. This paper evaluates such a design methodology, the Cognitive Work Analysis (CWA), and its applicability when designing an assistance system to support Human in the control of Intelligent Manufacturing System in Industry 4.0. Among several functions identified through the application of CWA, the assistant system might have to integrate a digital twin of the intelligent manufacturing system.

https://link.springer.com/article/10.1007/s10111-021-00667-y

Enero/2021

Towards a Functional Performance Validation Standard for Industrial Low-Back Exoskeletons: State of the Art Review

Mattia Pesenti, Alberto Antonietti, Marta Gandolla, Alessandra Pedrocchi

While the research interest for exoskeletons has been rising in the last decades, missing standards for their rigorous evaluation are potentially limiting their adoption in the industrial field. In this context, exoskeletons for worker support have the aim to reduce the physical effort required by humans, with dramatic social and economic impact. Indeed, exoskeletons can reduce the occurrence and the entity of work-related musculoskeletal disorders that often cause absence from work, resulting in an eventual productivity loss. This

very urgent and multifaceted issue is starting to be acknowledged by researchers. This article provides a systematic review of the state of the art for functional performance evaluation of low-back exoskeletons for industrial workers. We report the state-of-the-art evaluation criteria and metrics used for such a purpose, highlighting the lack of a standard for this practice. Very few studies carried out a rigorous evaluation of the assistance provided by the device. To address also this topic, the article ends with a proposed framework for the functional validation of low-back exoskeletons for the industry, with the aim to pave the way for the definition of rigorous industrial standards.

Sensors | Free Full-Text | Towards a Functional Performance Validation Standard for Industrial Low-Back Exoskeletons: State of the Art Review (mdpi.com)

Febrero/2021

Augmented Reality (AR) based framework for supporting human workers in flexible manufacturing

Konstantinos Lotsaris, Nikos Fousekis, Spyridon Koukas, Sotiris Aivaliotis, Niki Kousi, George Michalos, Sotiris Makris

This paper presents an Augmented Reality (AR) application that aims to facilitate the operator's work in an industrial, human-robot collaboration environment with mobile robots. In such a flexible environment, with robots and humans working and moving in the same area, the ease of communication between the two sides is critical and prerequisite. The developed application provides the user with handy tools to interact with the mobile platform, give direct instructions to it and receive information about the robot's and the broader system's state, through an AR headset. The communication between the headset and the robot is achieved through a ROS based system, that interconnects the resources. The discussed tool has been deployed and tested in a use case inspired from the automotive industry, assisting the operators during the collaborative assembly tasks.

Augmented Reality (AR) based framework for supporting human workers in flexible manufacturing - ScienceDirect

SECCIÓN II. ROBÓTICA COLABORATIVA

NOTICIAS

02/01/2021

JAKA Lens aporta visión a los cobot de JAKA

En el campo actual de robots colaborativos, existe una gran demanda de aplicaciones de visión robótica. Los robots equipados con visión pueden resolver la mayoría de las necesidades de automatización, siendo por tanto las aplicaciones de visión claves para impulsar la fabricación inteligente y la industria 4.0. JAKA Lens proporciona a los usuarios una versión web de la interfaz de configuración visual, con reconocimiento de objetivos, posicionamiento visual, gestión de la cámara, calibración mano-ojo y otras funciones, que pueden realizar rápidamente la configuración y gestión de proyectos de visión 2D, mejorar la facilidad de uso de cobot, y reducir el tiempo de integración de cobot.

JAKA Lens aporta visión a los cobot de JAKA - infoPLC

11/01/2021

Nuevo manipulador móvil bibrazo de Robotnik para aplicaciones industriales: RB-ROBOUT

RB-ROBOUT es un manipulador móvil autónomo y colaborativo para entornos industriales, cuya principal característica es disponer de dos brazos robóticos. Los cuadros eléctricos están integrados en el propio robot, y una mesa de trabajo con gran capacidad de carga. Este doble brazo amplía notablemente las posibilidades de manipulación del robot, pudiendo llevar a cabo numerosas tareas industriales como pick&place, posicionamiento de piezas, atornillado, montaje, carga y descarga o metrología.

Nuevo manipulador móvil bibrazo de Robotnik para aplicaciones industriales: RB-ROBOUT | hisparob

22/01/2021

Sener Aeroespacial finaliza la validación de la interfaz robótica SIROM para el proyecto EROSS H2020

SIROM es una interfaz robótica desarrollada por Sener Aeroespacial que se puede utilizar para aplicaciones en órbita y planetarias, lo que permite la interconexión de cargas útiles con vehículos espaciales, de cargas útiles con dispositivos de manipulación. La tecnología desarrollada es un sistema electromecánico integrado que combina cuatro soluciones en una sola envolvente: la conectividad mecánica, de datos, eléctrica y térmica. Como elemento clave, el SIROM aporta una solución fiable y estándar para las operaciones robótica.

Sener Aeroespacial finaliza la validación de la interfaz robótica SIROM para el proyecto EROSS H2020 – Actualidad Aeroespacial

03/03/2021

El 7º eje de igus amplía el alcance de Robots Colaborativos

Igus presenta un 7º eje listo para conectar que permite un desplazamiento linealmente de hasta 6 metros de los Robots ampliando su rango de acción. El sistema completo se compone de un eje con correa dentada drylin ZLW, que no requiere mantenimiento, una placa adaptada al tamaño de la base del robot, el armario eléctrico, los cables y todo el software. Para facilitar la integración del eje con el robot, igus ha desarrollado dos kits adaptadores: uno para los robots robolink y otro para los robots de UR. Estos proporcionan una automatización rápida, fácil y económica. Para garantizar que el eje pueda combinarse fácilmente con el robot, igus ofrece soluciones integrales para los robots UR3, UR5 y UR10 (Universal Robots), robolink DP y robolink DCi.

https://www.infoplc.net/noticias/item/109252-7%C2%BA-eje-igus-emplia-alcance-robots-colaborativos

PUBLICACIONES CIENTÍFICAS

Febrero/2021

Analysis of the Impact of Human–Cobot Collaborative Manufacturing Implementation on the Occupational Health and Safety and the Quality Requirements

Alena Pauliková, Zdenka Gyurák Babeľová, Monika Ubárová

Implementing Industry 4.0 and interconnected robotization in industrial enterprises drifts towards occupational changes. Nowadays, the task is to create cooperation and collaboration between a robot and a human in a common robotized workplace so that it is safe and effective. The type of robot, the robotic device that works in collaboration with a human operator, is called a cobot. In the case of a closer interaction of the robot or cobot with humans, it is necessary to consider where it is possible to replace human work entirely or where it is possible to merely supplement it. The most socially acceptable option is the implementation of robots only for the performance of supplementary tasks, since the traditional work positions of people in manufacturing processes would remain largely preserved. On the other hand, workplace robotization is particularly suitable for work environments with hazardous chemical substances that are carcinogenic and toxic to humans. Similarly, robotization helps to improve workplace ergonomics and also to avoid, for humans, very laborious and often repetitive work. The SWOT analysis (analysis of Strengths, Weaknesses, Opportunities, and Threats) was used as a relevant tool to assess various aspects of the impact of increasing robotization on working positions in industrial enterprises.

IJERPH | Free Full-Text | Analysis of the Impact of Human–Cobot Collaborative Manufacturing Implementation on the Occupational Health and Safety and the Quality Requirements (mdpi.com)

Marzo 2021

Technology vs. workers: the case of Italy's Industry 4.0 factories

Valeria Cirillo, Matteo Rinaldini, Jacopo Staccioli, Maria Enrica Virgillito

This article explores the relationship between the introduction of Industry 4.0 automation systems, the organisation of the work process, and the implications for employment, skill composition, power relations, and workers' intervention authority. We investigate the undergoing technological and organisational transformation in three high-tech automotive factories in Italy and we find that the push towards sheer automation does not constitute the most relevant process under way. Rather, more effort is devoted to digitalisation and interconnection. Technological change appears to be strategically used by firms to achieve

a lean system and a tense, demand-led, production flow. In terms of human-machine relationship and workers' authority to intervene on the production process, our case studies show that Industry 4.0 reduces room for employees' autonomy and increases forms of management control.

https://www.sciencedirect.com/science/article/abs/pii/S0954349X2030401X

Marzo 2021

Industry 4.0 technologies: critical success factors for implementation and improvements in manufacturing companies

Rosella Pozzi, Tommaso Rossi, Raffaele Secchi

The impact of Industry 4.0 and its opportunities are expected to be significant for manufacturers. A lack of empirical studies creates the need for academic contributions on the critical success factors of Industry 4.0 implementations and their resultant improvements for manufacturing businesses. This research uses case studies of eight implementations of Industry 4.0 technologies in Italy to supplement existent literature. An original data set was constructed using a purposely defined research protocol using plant visits and structured interviews. Continuous improvement/lean management emerged as a critical success factor for implementation, together with quality and flexibility-based competition, top management leadership, establishment of inter-functional teams, conducting of preparatory activities, project planning and training activities. Incremental/evolutionary and radical/revolutionary improvements in business model elements are possible outcomes of implementations, while addressing customers' needs emerges as an antecedent to radical/revolutionary improvements. Managers will benefit from understanding how to achieve successful implementations and business improvements.

https://www.tandfonline.com/doi/abs/10.1080/09537287.2021.1891481

SECCIÓN III. EVENTOS INDUSTRIA 4.0

AUTOMATE FORWARD

22-26 Marzo 2021, Evento virtual

One thing every industry has in common right now is the need to do more with less. Whether it's less manpower or tighter budgets, demand is increasing even if resources are not. Automation is the key to not just getting through these difficult times, but to growing during them! With more than 80 speakers reviewing robotics, machine vision, motion control, artificial intelligence, and smart automation technologies, Automate Forward is the event to participate in to learn how to reach and exceed your goals. Join us March 22-26 for this FREE virtual event and learn how automation will help you move forward!

https://www.automateshow.com/conference/automate-forward

Hannover Messe

12-16 abril 2021, Evento virtual

In view of the current developments surrounding Covid-19, Deutsche Messe AG, together with the exhibitors of HANNOVER MESSE, has decided to stage the world's leading industrial trade fair in a purely digital format next April. The digital HANNOVER MESSE will focus on a comprehensive conference program, the digitization of product presentations and software-based business dating. "Virtual visitors will be able to quickly gain an overview of product innovations and use new tools to make direct contact with the companies that are relevant to them," added Köckler.

https://www.hannovermesse.de/en/

European Robotics Forum 2021

13 –14 abril 2021, Evento virtual

The European Robotics Forum 2021 (ERF 2021), the most influential meeting of the robotics community in Europe, will be held as a virtual event 13/14 April 2021 with the option to hold few sessions and side events such as lab tours the days before and/or after. The ERF2021 covers all aspects and current themes related to the field of robotics. Researchers, engineers, managers, and a growing number of entrepreneurs, business people, 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://www.eu-robotics.net/robotics_forum/programme/call-for-workshops/index.html

TRANSFIERE 2021

14-15 Abril 2021, Málaga

La celebración del principal encuentro sobre I+D+i en el Sur de Europa tendrá lugar los días 14 y 15 de abril de 2021 en lugar de los días 17 y 18 de febrero, cuando estaba programado inicialmente. En su objetivo de impulsar la capacidad innovadora y la competitividad empresarial, Transfiere permitirá al ecosistema de innovación nacional conocer de primera mano las nuevas convocatorias sobre financiación a medio y largo plazo recogidas en el Programa Marco de Investigación e Innovación de la Unión Europea (Horizonte Europa 2021-2027), así como las novedades sobre los fondos para la recuperación y la reactivación económica, programas europeos y otras oportunidades de financiación.

https://transfiere.fycma.com/

Manufacturing Data Summit

1-2 junio 2021, Evento virtual

Returning in 2021 as a virtual event, Manufacturing Data Summit provides an international forum for manufacturing and critical infrastructure leaders driving digital transformation across Europe. As the adoption of Industry 4.0 technologies and processes shifts from being an advantage point to a necessity, senior industry leaders gather to explore how to boost performance through technology, launch pioneering projects and drive operational efficiency while creating cross-functional synergies and combining technical expertise.

https://europe.manufacturingdata.io/

Advanced Factories 2021

8-10 junio 2021, Barcelona

Advanced Factories, es la cumbre anual sobre innovación industrial. Una plataforma para presentar únicamente las últimas innovaciones en equipos de Automatización Industrial junto con las tecnologías que emergen de la Industria 4.0. Junto al mayor congreso europeo sobre innovación industrial, el Industry 4.0 Congress en el que expertos de primer orden internacional dan las claves para implementar nuevos modelos de negocio y profundizan en las tendencias tecnológicas más punteras entorno a la Industria Avanzada.

www.advancedfactories.com

Sensors & IIoT Manufacturing + Automation + Robotics

16 –17 junio 2021, Evento virtual

Our full agenda will be published shortly, in the meantime check out some of the topics being covered and find out find out about how professionals in this field are implementing advanced sensing and IoT technologies. Key topics being explored include: Journey to Smart Factory | Combining AI and IoT to Improve Efficiency; The value of Sensors – Benefits of Digitisation | Optimising Industrial IoT (IIoT); Smart Manufacturing and Adaptability through Sensors | Robots and Cobots – the Robotics Evolution; Digital Transformation Post-Pandemic | Blockchain Enabled Sensors; Data Analytics and Advanced Sensing Technologies | Implementing Industry 4.0.

Agenda at a Glance - Sensors & IIoT: Manufacturing, Automation & Robotics (transformindustry.com)

10th IoT Week

31 agosto – 3 agosto 2021, Dublín

The IoT Week 2021 conference will be in a hybrid format, with the possibility of attendance as a virtual delegate or a virtual sponsor/exhibitor as an alternative to physical attendance, for anyone unable to travel. All sponsors and exhibitors will be featured appropriately in the online Conference Platform and Conference App, with virtual display space and features to augment a possible physical stand area. Therefore, in addition to the opportunities of the face-to-face meetings in our exhibition area, sponsors and exhibitors will have wider interaction with a much larger global community through the virtual platform.

https://iotweek.org/