REALIDAD AUMENTADA Y VIRTUAL.

BOLETÍN DE VIGILANCIA TECNOLÓGICA

ABRIL-JUNIO 2021

AXENCIA GALEGA DE INNOVACIÓN – CIS TECNOLOXÍA E DESEÑO

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SUMARIO

NOTICIAS

13/04/2021

Bentley Systems integrates its iTwin platform with NVIDIA Omniverse for real-time AR and VR visualization of Digital Twins

Bentley Systems has extended its Bentley iTwin platform to integrate with NVIDIA Omniverse to provide a graphics pipeline for AI-enhanced, real-time visualization, and simulation of infrastructure digital twins. According to the company, the integration will allow engineering-grade, millimeter-accurate digital content to be visualized with photorealistic lighting and environmental effects on multiple devices including web browsers, workstations, tablets, and virtual reality (VR) and augmented reality (AR) headsets from anywhere in the world.

https://www.auganix.org/bentley-systems-integrates-its-itwin-platform-with-nvidia-omniverse-for-real-time-ar-and-vr-visualization-of-digital-twins/

14/04/2021

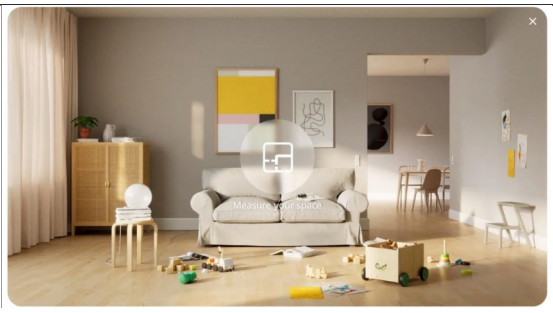
BMW launches its 'Virtual Viewer' web browser-based Augmented Reality experience powered by 8th Wall

Automotive manufacturer BMW is today launching its first augmented reality (AR) tool in the UK with the release of the 'BMW Virtual Viewer', which offers a new way for potential customers to explore the BMW range, select and customise a model, and learn about the company's plug-in hybrid electric vehicles (PHEVs).

The BMW Virtual Viewer is a step towards the digitisation of the customer experience, allowing anyone to enjoy the viewer via a mobile web browser, with no need to download an app. The experience is powered by 8th Wall's web-based augmented reality technology platform.
https://www.auganix.org/bmw-launches-its-virtual-viewer-web-browser-based-augmented-reality-experience-powered-by-8th-wall/

25/04/2021

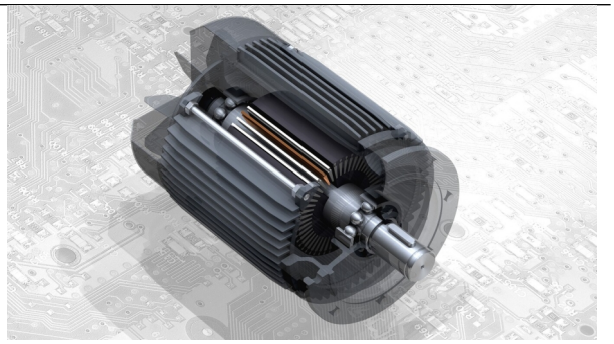
IKEA Studio, la nueva app de realidad aumentada con LiDAR para probar todos los muebles de IKEA en tu casa



IKEA ha lanzado una nueva app de realidad aumentada, que aprovecha todas las ventajas del sensor LiDAR incluido en algunos móviles.
La realidad aumentada va a ser tendencia los próximos años, tanto a través del móvil como en diferentes gafas, incluidas las de Apple. La vamos a ver mucho en aplicaciones comerciales como IKEA Studio.
https://computerhoy.com/noticias/tecnologia/ikea-studio-nueva-app-realidad-aumentada-lidar-852557

26/04/2021

Digital twins: qué son, para qué sirven y cuáles son los beneficios y problemas de los gemelos digitales



¿Cómo se aseguran los ingenieros de la NASA de que van a poder controlar cualquier elemento de una nave especial cuando está a miles de kilómetros de distancia? ¿De que van a saber cómo se comporta cuando entran en juego otras temperaturas y fuerzas de la gravedad? Creando gemelos digitales.Un gemelo digital (o digital twin) es una representación digital de un objeto, proceso o servicio físico: desde un motor a reacción o parques eólicos a edificios o ciudades enteras. Estas réplicas virtuales son utilizadas para hacer simulaciones antes de que se creen e implementen cambios en los objetos reales, con el fin de recopilar datos para predecir cómo funcionarán.

https://www.xataka.com/pro/digital-twins-que-sirven-cuales-beneficios-problemas-gemelos-digitales

17/05/2021

Llegan nuevos datos sobre el primer dispositivo de Realidad Virtual de AppleKopin announces new all-plastic Pancake optics for use in XR headsets

Kopin Corporation, a developer and provider of high-resolution microdisplays and display subassemblies for defense, enterprise, consumer and medical products, has recently announced that it has succeeded in developing all-plastic Pancake optics with what it states is “breakthrough performance” for virtual reality (VR), augmented reality (AR) and mixed reality (MR) applications (collectively XR).

Kopin has applied for three patents on the design, manufacturing processes and system utilization of all plastic Pancake optics, and expects additional filings to follow.

https://www.auganix.org/kopin-announces-new-all-plastic-pancake-optics-for-use-in-xr-headsets/

18/05/2021

Ferrari contrata a AWS para mejorar sus coches: creará gemelos digitales de sus piezas en la nube para obtener datos de rendimiento antes de fabricarlas

El fabricante italiano de coches deportivos Ferrari va a usar las herramientas de inteligencia artificial, procesado de macrodatos y machine learning de AWS para mejorar el diseño de sus vehículos. Entre los aspectos más interesantes de esta colaboración, anunciada hoy por Amazon, se encuentra la utilización de aplicaciones especializadas para la computación eficiente de alto rendimiento con las que los transalpinos realizarán simulaciones complejas para probar el funcionamiento de sus automóviles en multitud de situaciones.

https://www.xataka.com/pro/ferrari-contrata-a-aws-para-mejorar-sus-coches-creara-gemelos-digitales-sus-piezas-nube-para-obtener-datos-rendimiento-antes-fabricarlas

20/05/2021

Aston Martin designs immersive XR customer experience powered by Lenovo, NVIDIA and Varjo technologies

Car manufacturer Aston Martin is using the latest virtual, augmented and mixed reality (VR/AR/MR – collectively extended reality or 'XR') technologies to drive new experiences for its customers and designers. The company worked with Lenovo and Varjo, a provider of "human eye resolution" XR headsets, to deliver an immersive experience that allows customers to explore its first luxury SUV, the Aston Martin DBX, without physically being in dealerships or offices.

https://www.auganix.org/aston-martin-designs-immersive-xr-customer-experience-powered-by-lenovo-nvidia-and-varjo-technologies/

21/05/2021

Snap compra WaveOptics y presenta sus nuevas gafas Spectacles AR

WaveOptics es una compañía dedicada a la fabricación de piezas y elementos que se usan en las gafas de realidad aumentada. La compra millonaria deja muy en claro cuáles son las intenciones de Snap, apuntando a un futuro en el cual veremos el mundo a través de cristales inteligentes que nos mostrarán información y datos en tiempo real.

https://hoyentec.com/tecnologia/snap-compra-waveoptics-y-presenta-sus-nuevas-gafas-spectacles-ar/

27/05/2021

New Vuforia Instruct Offering to Streamline Creation of 3D CAD-Based Work Instructions

New Offeringfrom PTC's Vuforia Enterprise AR Suite Empowers Front-line Workers to Accurately and Efficiently Complete Inspections and Document Relevant Insights in RealTime.

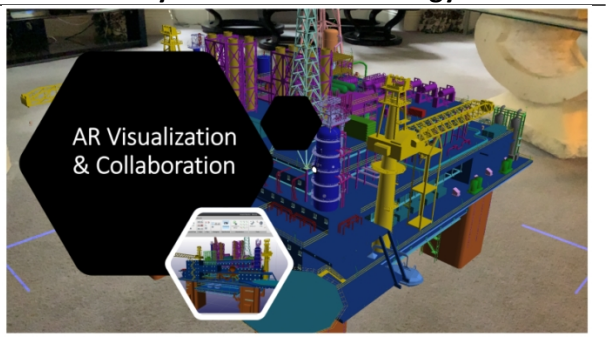
•Vuforia Instruct SaaS Offering Enables OEMs to Simplifyand Accelerate Authoring of CAD-Based ARWork Instructions.

https://www.ptc.com/en/news/2021/vuforia-instruct-streamlines-creation-3d-cad-based-work-instructions

29/05/2021

Arvizio teams with Vincerion to deliver Augmented Reality solutions to the energy sector

Arvizio, a provider of augmented reality (AR) solutions for real time collaboration and visualization, has today announced that it has teamed with Vincerion Group, a cloud migration, business agility, automation, product management and digital transformation company, to accelerate adoption of augmented reality (AR) solutions in the energy vertical.



Vincerion will offer its clients the Arvizio Immerse 3D solution for 3D model visualization, optimization and hybrid rendering of CAD/BIM models and LiDAR scans for multi-user, multi-location shared experiences utilizing Microsoft HoloLens 2 and Magic Leap headsets as well as mobile AR devices such as smartphones and tablets.

https://www.auganix.org/arvizio-teams-with-vincerion-to-deliver-augmented-reality-solutions-to-the-energy-sector/

11/06/2021

Facebook acquires Seattle virtual reality gaming company BigBox VR, makers of Population: One

Seattle startup BigBox VR, the company behind multiplayer virtual reality game POPULATION: ONE, has been acquired by Facebook.Facebook was drawn to BigBox due to the popularity of POP: ONE, which has been one of the top-performing titles on the Oculus platform since it launched last year and racked up $10 million in revenue within a few months. Facebook and its VR-focused subsidiary Oculus plan to help BigBox accelerate its vision for the game and also other projects.“We continue to invest in content that fosters social connection, and we believe POP: ONE delivers this experience to the VR community in spades within a super fun gaming experience,” Mike Verdu, vice president of content for Facebook Reality Labs, wrote in a blog post.

https://www.geekwire.com/2021/facebook-acquires-seattle-virtual-reality-gaming-company-bigbox-vr-makers-population-one/

15/06/2021

Nace Atemin, la plataforma de realidad virtual que ayuda a las empresas a gestionar los riesgos

El próximo 17 de junio, se presenta en la Universitat Politècnica de València (UPV) ATEMIN, la primera plataforma existente en el mercado que utiliza la neurociencia y la realidad virtual para evaluar y entrenar la toma de decisiones humanas ante el riesgo en las empresas. La solución nace de la colaboración entre la empresa Martin Brainon, especializada en ciencias del comportamiento y gestión de riesgos, Quatechnion, centrada en el desarrollo de soluciones basadas en tecnología y LabLENI, el laboratorio de investigación en Neurotecnologías Inmersivas de la UPV.

https://valenciaplaza.com/nace-atemin-plataforma-realidad-virtual-ayuda-empresas-gestionar-riesgos

21/06/2021

ITCL y SIMUMAK abordan nuevos simuladores de conducción y realidad virtual

ITCL Centro Tecnológico y SIMUMAK unen capacidades y conocimientos e inician una colaboración técnica estable en proyectos relacionados con el desarrollo de simuladores de conducción y escenarios procedurales, en los que ambas entidades disponen de varias líneas de trabajo sinérgicas.Así, ITCL se convierte en el socio tecnológico de SIMUMAK; una empresa española perteneciente al grupo Everis que cuenta con una dilatada experiencia en el desarrollo de soluciones de simulación para los sectores de automoción, construcción, minería, defensa y logística. En sus 15 años de vida, cuenta con más de 5.000 simuladores instalados en más de 19 países diferentes.

https://www.cope.es/emisoras/castilla-y-leon/burgos-provincia/burgos/noticias/itcl-simumak-abordan-nuevos-simuladores-conduccion-realidad-virtual-20210621_1354577

PUBLICACIONES CIENTÍFICAS

ABRIL

Improving AR-powered remote assistance: a new approach aimed to foster operator's autonomy and optimize the use of skilled resources

Augmented reality (AR) has a number of applications in industry, but remote assistance represents one of the most prominent and widely studied use cases. Notwithstanding, although the set of functionalities supporting the communication between remote experts and on-site operators grew over time, the way in which remote assistance is delivered has not evolved yet to unleash the full potential of AR technology. The expert typically guides the operator step-by-step, and basically uses AR-based hints to visually support voice instructions. With this approach, skilled human resources may go under-utilized, as the time an expert invests in the assistance corresponds to the time needed by the operator to execute the requested operations. The goal of this work is to introduce a new approach to remote assistance that takes advantage of AR functionalities separately proposed in academic works and commercial products to re-organize the guidance workflow, with the aim to increase the operator's autonomy and, thus, optimize the use of expert's time. An AR-powered remote assistance platform able to support the devised approach is also presented. By means of a user study, this approach was compared to traditional step-by-step guidance, with the aim to estimate what is the potential of AR that is still unexploited. Results showed that with the new approach it is possible to reduce the time investment for the expert, allowing the operator to autonomously complete the assigned tasks in a time comparable to step-by-step guidance with a negligible need for further support.
https://link.springer.com/article/10.1007/s00170-021-06871-4

Metrics development and modelling the mixed reality and digital twin adoption in the context of Industry 4.0

This paper aims to examine the current technology acceptance model (TAM) in the field of mixed reality and digital twin (MRDT) and identify key factors affecting users' intentions to use MRDT. The factors are used as a set of key metrics for proposing a predictive model for virtual, augmented and mixed reality (MR) acceptance by users. This model is called the extended TAM for MRDT adoption in the architecture, engineering, construction and operations (AECO) industry.
https://www.emerald.com/insight/content/doi/10.1108/ECAM-10-2020-0880/full/html

MAYO

Advancing digital twin implementation: a toolbox for modelling and simulation

The concept of Digital Twin is becoming increasingly relevant for the realization of Industry 4.0. Digital Twin has the capability to optimize the product lifecycle stages and support the industries for intelligent decision-making and cost-effective business solutions. As a trending topic, a wide range of literature and a number of implementation approaches have been designed and developed. However, most of the existing implementations do not fully meet the scope and requirements defined for a digital twin, mainly due to lack of consensus about the properties of a digital twin and its corresponding components. To fill this gap, this paper presents a toolbox for realizing a Digital Twin in domain-specific applications by enhancing the associated modelling and simulation practices. The approach is illustrated by implementing the digital twin of a battery system in a robotic minicar.
https://www.sciencedirect.com/science/article/pii/S2212827121003656

Getting started with virtual reality for sensory and consumer science: Current practices and future perspectives

While virtual reality (VR) has become increasingly popular in food-related research, there has been a lack of clarity, precision, and guidelines regarding what exactly constitutes a virtual reality study, as well as the options available to the researcher for designing and implementing it. This review provides a practical guide for sensory and consumer scientists interested in exploring the emerging opportunities offered by VR. We take a deep dive into the components that make up a VR study, including hardware, software, and response measurement methods, all the while being grounded in immersion and presence theory. We then review how these building blocks are put together to create two major categories of research scenarios: product selection, which can be entirely created in VR, and food evaluation, which involve tasting products in real life. For each category, we review current literature with a focus on experimental design, then highlight future avenues and technical development opportunities within sensory and consumer research. Finally, we evaluate limitations and ethical issues in VR food research, and offer future perspectives which go above and beyond ensuring ecological validity in product testing.
https://www.sciencedirect.com/science/article/pii/S0963996921003094

JUNIO

Virtual reality environment for industrial robot control and path design

The current market trends have focused on personalization, where products based on the same platform can have different variations so they can satisfy multiple market segments. Trying to keep up with these trends, industries have introduced hybrid Human Robot Collaborative stations that offer short throughput times, along with the flexibility to process different tasks. For this kind of flexibility to be achieved in production, a concept is examined for remotely reprograming industrial robots. As a result, a fully automated assembly line or a production station, could be repurposed to handle different products or processes, using the currently installed equipment with minor adjustments. The concept that is described in this paper presents a teleoperation – based method for process design and control of industrial robots utilizing Virtual Reality. The main aim is to reduce the time and effort required for repurposing the robot operation without the physical presence of a robot operator at the shop floor. A case study is presented to demonstrate the above described concept.
https://www.sciencedirect.com/science/article/pii/S2212827121004807

Towards developing multiscale-multiphysics models and their surrogates for digital twins of metal additive manufacturing

Artificial intelligence (AI) embedded within digital models of manufacturing processes can be used to improve process productivity and product quality significantly. The application of such advanced capabilities particularly to highly digitalized processes such as metal additive manufacturing (AM) is likely to make those processes commercially more attractive. AI capabilities will reside within Digital Twins (DTs) which are living virtual replicas of the physical processes. DTs will be empowered to operate autonomously in a diagnostic control capacity to supervise processes and can be interrogated by the practitioner to inform the optimal processing route for any given product. The utility of the information gained from the DTs would depend on the quality of the digital models and, more importantly, their faster-solving surrogates which dwell within DTs for consultation during rapid decision-making. In this article, we point out the exceptional value of DTs in AM and focus on

the need to create high-fidelity multiscale-multiphysics models for AM processes to feed the AI capabilities. We identify technical hurdles for their development, including those arising from the multiscale and multiphysics characteristics of the models, the difficulties in linking models of the subprocesses across scales and physics, and the scarcity of experimental data. We discuss the need for creating surrogate models using machine learning approaches for real-time problem-solving. We further identify non-technical barriers, such as the need for standardization and difficulties in collaborating across different types of institutions. We offer potential solutions for all these challenges, after reflecting on and researching discussions held at an international symposium on the subject in 2019. We argue that a collaborative approach can not only help accelerate their development compared with disparate efforts, but also enhance the quality of the models by allowing modular development and linkages that account for interactions between the various sub-processes in AM. A high-level roadmap is suggested for starting such a collaboration.
https://www.sciencedirect.com/science/article/pii/S2214860421002542

The development of a low-cost photogrammetry-based 3D hand scanner

Acquiring an accurate 3D scan of the human hand is a challenging task, mainly due to the complicated geometry and the instability of the hand. In this paper, we present a low-cost photogrammetry-based scanner that is designed for scanning the human hand. The scanner has fifty modules, each has a Raspberry Pi with an 8-megapixels camera. They are uniformly positioned in two parallel frames and 96% of a hand surface can be viewed by at least 3 cameras. Using the timestamp method, we synchronize the shutters of the 50 cameras within the range of 80 ms to minimize the influence of the instability of the hand. Moreover, the scanner is easy to build with its modular design, and easy to operate with a laptop that is connected to the system by WiFi. Using a 3D printed prosthetic hand, we compared the 3D scanning accuracy of the proposed scanner with the Artec Spider® scanner.
https://www.sciencedirect.com/science/article/pii/S2468067221000419

Understanding consumer behavior in the multimedia context: incorporating gamification in VR-enhanced web system for tourism e-commerce

This study aims to investigate how gamification and virtual reality (VR)-enhanced web services can be integrated to influence consumer behavior in the context of tourism e-commerce. A gamified VR-enhanced tourism web system (VRTWS) was designed and developed for this investigation, while a research framework with 12 hypotheses was proposed and empirically tested by adopting PLS-SEM approach to analyze 208 valid data collected from survey. The results reveal that both Enjoyment and Activation in Gamification significantly and positively affected Media Richness. Additionally, Media Richness significantly and positively affected both Usefulness and Ease of Use in using VR technology with gamification. Also, a user's Perceived Value is not only positively affected by Usefulness and Ease of Use but also Interactivity and Immersion in a gamified VRTWS. Immersion was found to be positively affected by Presence. Through the positive effect on Satisfaction, user's Perceived Value had positive effect on the Intention toward adoption. The proposed gamified VRTWS and the study results with implications are expected to be referenced by the researchers and practitioners for managing incorporation of gamification into designing, developing, and managing their VR-enhanced service in tourism e-commerce..
https://link.springer.com/article/10.1007/s11042-021-11149-8

Augmented Reality: Focusing on Photonics in Industry 4.0

Industry 4.0 (or 4th industrial revolution) facilitates horizontal and vertical digital information flow along value chains up to the end-customer and is highly relevant in a broad variety of industries. Augmented reality (AR) is a key technology in Industry 4.0, which connects the virtual and real-world environments using such digital information flows. In doing so, the technology relies upon the systems that includes hardware and software components. Particularly, optics and photonics are of much importance in the display and processing of information in these systems. However, a particular challenge is that the AR-based systems have not been adopted in the industry as much as other technologies even after several decades of their existence. Based on review of academic literature, an industrial survey and experiments conducted in the industry, this article aims to identify success factors and challenges of AR systems and metrics of photonic components that can form the basis of an AR* framework for photonics-based system design for future research.
https://ieeexplore.ieee.org/abstract/document/9468957

EVENTOS

28 JUNIO 2021 – 1 JULIO 2021

MOBILE WORLD CONGRESS Barcelona

The world's biggest connectivity event goes fully hybrid. This year you can connect in-person or online. From technicians and regulators, to founders and government delegations – whether it's with a click of a button, a smile on screen, a friendly elbow bump, or a knowing nod, 2021 offers even more ways to seal that deal with the most influential attendees.
https://www.mwcbarcelona.com/

2 y 3 de septiembre 2021

AWE Asia 2021

AWE Asia is marketed as the world's #1 Augmented Reality and Virtual Reality Event Series. Throughout this two-day convention, 50+ speakers, 60+ exhibitors, and over 2,000 XR professionals will join together to discuss the latest opportunities and trends arising from the world's hottest region for XR technology.

https://www.aweasia.com/

29 septiembre al 1 de octubre 2021

VR/AR Global Summit 2021 – Europe

The VR/AR Global Summit is an online conference hosted that connects the best virtual reality and augmented reality solution providers with enterprise and media entertainment companies. Last year's edition attracted more than 15,000+ attendees, 500+ speakers, exhibitors, plus 1000s interactive 1-on-1s, 60 networking group sessions on specific topics/verticals, and so much more! The VRARA will be hosting two 2021 events – the North American Time Zone event on June 2-4 and a European Time Zone event from September 29 – October 1. This will be a great year of VR and AR content for the world.
https://www.vrarglobalsummit.com

05 – 07 OCTUBRE 2021

IOT SOLUTIONS WORLD CONGRESS

The 2021 edition will take place October 5-7 and it will be focused on disruptive combinations of technologies including IoT, AI, 5G, Digital Twin, Robotics and quantum computing. The new edition will combine an exclusive face-to-face exhibition aimed at C-Level executives with additional digital content for a broader worldwide audience.

https://www.iotsworldcongress.com/

19-20 OCTUBRE 2021

Digital Twin World

Digital Twin World Conference is an exclusive virtual event consisting of top-level content and thought leadership discussions exploring the digital twin ecosystem.

Join us at Digital Twin World North America on 22-23 September 2021, and hear from leading digital experts and discover key strategies for making your digital efforts a success. Discover the critical technologies and approaches needed to make better, more informed business decisions, improve operational efficiency, improve customer engagement and retention and drive your organization's digital culture.

Book your ticket today to learn how to tackle the latest challenges, and explore opportunities, market insights, trends, and debates within digital twin technology.

https://www.digitaltwin-conference.com/

18-19 noviembre 2021

Technarte Bilbao 2021

The topics of the interest for the conference include, but are not limited to:

- Generative art
- AI art
- Virtual and augmented reality
- Wearable tech
- Data art
- Robotic art
- Interactive architecture
- Immersive environments

https://technarte.org