Monika Underwood
Expert in Residence

You're Something Spatial

The convergence of spatial computing, digital twins, and real-time 3D is transforming industries with immersive, personalized, and sustainable experiences

Have we got something for you! Where digital layers interact with the physical, there's the magic of spatial computing — blending virtual data with real environments. Alongside digital twins and real-time 3D, it's revolutionizing industries by delivering immersive, real-time insights and hyper-personalized experiences. Whether it's optimizing factory floors, enhancing medical procedures, or reshaping smart cities, these technologies merge what we see with what we need to know. Large vision models and AI power this shift, giving machines the ability to both read and show the world. It all brings greater efficiency, lower costs, and smarter decisions. And you're not just witnessing this change — you're something special in driving it forward.

What

- Spatial computing, spatial web, digital twins, large vision models, and real-time 3D (RT3D) are at the forefront of the next digital revolution.

- These technologies merge the physical and virtual worlds, enabling immersive interactions through advanced visualization and intelligent systems. The spatial web, a new layer of the internet, links physical and digital objects, creating an interconnected system where real-time data is accessible in virtual environments.

- Spatial computing involves the overlay of digital information on the physical world, offering intuitive user experiences.

- Digital twins, virtual replicas of physical assets, provide real-time monitoring, simulation, and optimization of processes. Large vision models enhance machine perception, enabling devices to recognize and interpret physical environments.

- RT3D technology powers immersive simulations, enhancing industries from gaming to industrial engineering. Together, these advancements create an integrated digital ecosystem, transforming how we interact with technology across all domains.

Use

- **KLM Royal Dutch Airlines** harnessed Unity's XR technology to develop an advanced VR training application: the KLM Cityhopper VR Cockpit Trainer, to fully immerse trainees and enhance quality and customization of training scenarios.

- Surgeons at **GEM Hospital** in India have used the Apple Vision Pro headsets to perform laparoscopic surgeries. Through this, the doctors were able to get real-time transmission without delays, enhanced vision, and expert opinions using FaceTime, allowing surgeons to view surgery footage as well as CT scans simultaneously.

- **Regional Jet Center (RJC)**, part of the Air France-KLM Group, is harnessing spatial computing to revolutionize pre-flight damage checks. By integrating AR and digital twin technology, their new solution boosts efficiency by 900%, reducing flight delays while enhancing safety.

- **Dyson** inducted spatial computing tech in the consumer electronics segment with the launch of CleanTrace. It's an app equipped with advanced sensing technology for 'spatial cleaning', helping in identifying missed areas and providing proof of cleanliness directly on the phone in real-time using AR technology.

- **Sightful** has introduced the Spacetop G1, a laptop that merges traditional laptop functionality with spatial computing. Featuring a 100 inch virtual workspace instead of a standard 13 inch LCD, it's designed for enhanced productivity in a work from anywhere environment.

Impact

- The integration of these technologies drives significant efficiency gains, reduces costs, and enhances personalization across industries.

- Real-time monitoring and predictive analytics through digital twins minimize downtime and improve resource allocation, resulting in less waste.

- Personalized customer experiences in retail, powered by spatial computing, increase engagement and conversion rates.

- In healthcare, real-time data and immersive training tools reduce the risks associated with surgeries, leading to improved patient outcomes.

- Education becomes more accessible and effective through immersive learning environments, while manufacturing sees faster go-to-market and reduced operational errors.

- The overall reduction of energy consumption and physical footprint is a critical benefit, contributing to sustainability goals across sectors.

Tech

- **Real-Time 3D Engines:** Unity, Unreal, Panda3D, Enscape, NeoAxis Engine, Torque 3D, CryEngine 3

- **Spatial Vision:** NVIDIA, Intel, AWS, Qualcomm, Leap Motion

- **Spatial Web:** Meta, Google, Apple, Microsoft, Cesium, Mapbox, Unity, ESRI

- **Spatial Computing:** Unity, Matterport, NVIDIA, Microsoft, Meta, Apple, AWS, Qualcomm, PTC, Snapchat, ARway, Magic Leap, Rokid

- **Large Vision Models (LVM):** OpenAI, NVIDIA, Hugging Face, Google, Meta, Microsoft, AWS, Landing AI, Solulab