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Daniel Burrus'

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TECHNOTRENDS[®] NEWSLETTER

*The biggest ideas that are
changing everything*

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Life-Size Hologram for Speakers, Educators, and Entertainers

By Daniel Burrus, CEO of Burrus Research

We've seen it in sci-fi movies, television series, and likely the music and entertainment world. Now, you're going to see it on the lecture circuit and more!

With the help of holographic telepresence pioneer ARHT Media, I now offer the opportunity for organizations worldwide to have a hologram of myself beamed in for a presentation unlike anything they've ever seen before. This special keynote offering is exclusively designed to be interactive, customized to the specific audience and industry, and a highly exciting, engaging, and ultimately mind-blowing merger of future technology and human presentation.

There are a number of ways I'm using this new holographic technology to amaze my audiences.

My goal in pursuing this offering to my clients was to greatly exceed their meeting expectations and amaze the audience while maintaining the integrity of my in-person presentations with this futuristic and innovative visual experience.

There are a number of ways I'm using this new holographic technology to amaze my audiences. For example, I can be in a studio in L.A. and literally beam in to a stage anywhere in the world and deliver a live presentation to an audience as a life-size 3D hologram, interacting with the audience as if I was physically there.

In fact, I'm in an ARHT Media studio, standing in front of a high-definition camera using special software with a green screen behind me where

we can plug in any background the client wants. I have a monitor in front of me where I can see the live audience in real time and listen to and react to them.

In the audience location, an ARHT Media tech will set up and run the equipment, making this a painless, no-worry experience for the meeting or convention planners. In addition, because there are many ARHT Media locations globally where a tech and equipment are located, travel costs are very reasonable regardless of where the meeting is located.

Another variation I offer is to pre-record a customized presentation for the client using the special ARHT Media equipment and send it with the technician and holographic projection equipment to the audience location. This has two advantages for my clients: It eliminates the need for a high-bandwidth connection at the audience location, and I can be doing something else while delivering an amazing speaking experience for an audience and my client.

This is incredible if you think about it; there was a time not long ago where the concept of beaming in as a life-size hologram was something you could only see at the movies. But before I delve into the copious number of benefits that holographic telepresence has to offer, let's first discuss ARHT Media and what goes into accomplishing such a task.

CEO Larry O'Reilly is a quite successful global

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TECHNOLOGY NEWS HIGHLIGHTS

CRISPR Controversy

The controversy over using CRISPR gene editing to modify human embryos continues to escalate as a Russian geneticist announced plans to seek approval for using the method to prevent inherited forms of deafness.

Five couples, all of whom are deaf due to mutations in the GJB2 gene, have agreed to the procedure in hopes of carrying a hearing biological child to term.

The announcement has drawn criticism from the scientific community as well as social groups that view deafness as a culture rather than a disability. Many deaf individuals lead fulfilling lives without the need for medical interventions, making a risky procedure like CRISPR highly unwarranted.

In general, bioethicists argue that human

CRISPR trials should be limited to embryos with fatal conditions, and only when there are no other alternatives to prevention.

The dangers of moving forward with this technology, which is still largely unproven in humans, go beyond eventual attempts to use it for other unacceptable reasons – such as “designer babies.”

The inadvertent creation of fatal mutations that could be passed on to future generations is a concern that cannot be overlooked, and will require far more research in order to guard against.

For information: Denis Rebikov, Kulakov National Medical Research Center for Obstetrics, Gynecology and Perinatology, 117997 Moscow Street, Moscow, Russia; phone: +7-495-531-4444; Web site: <http://ncagp.ru/>

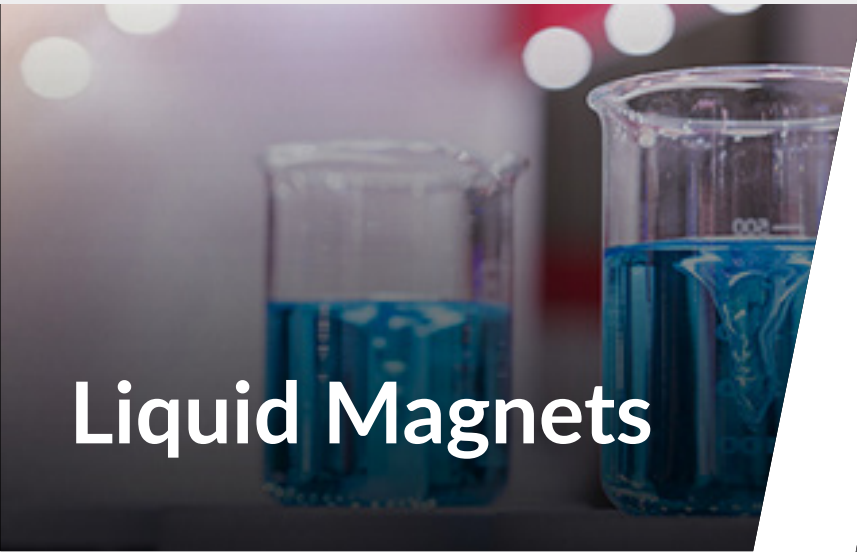


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Liquid Magnets

As early as the 1960s, scientists discovered that liquids could be magnetized, but only when they were exposed to a strong magnetic field. Recently, however, researchers have created a magnetic liquid that remains magnetized even when the external field is removed, opening up a host of new applications for fluidic devices.

The unique material was developed by injecting iron-oxide nanoparticles into droplets of toluene - a liquid hydrocarbon that is insoluble in water. A soap-like material was then added and the droplets were suspended in water, causing the nanoparticles to group together on the surface, forming a semisolid shell. When placed on a stirring plate with a bar magnet, the positive and negative poles of the liquid followed the solid magnet. But when the magnet was removed, the soapy emulsion enabled the droplets to maintain their magnetic charge.

Using a 3D printer, researchers then used two liquids (one containing nanoscale clay particles and one containing nanoscale polymer particles) to generate a fluidic device on a specially designed glass substrate. The two liquids quickly came together to create thin channels about one millimeter in diameter. Such fluidic circuits could serve a wide range of applications from automating chemical reactions to filtering out unwanted by-products in a functioning system.

For information: Thomas Russell, Lawrence Berkeley National Laboratory, 1 Cyclotron Drive, Mail Stop 62R0203, Berkeley, CA 94720; phone: 510-486-5260; email: trussell@lbl.gov; Web site: <https://www.lbl.gov/> or <https://newscenter.lbl.gov/2019/04/25/researchers-3d-print-a-lab-on-a-chip/>



Hyperloop Update

At the Wall Street Journal's recent Future of Everything Festival, transportation and travel were high on the list of topics being discussed by companies and legislators alike. As technology continues to transform our lives in amazing ways, getting from point A to point B remains as much of a hassle as it was decades ago. But a few forward-thinking companies are hoping to change that with hyperloop - a new mode of transportation that moves vehicles through tubes at high speeds and higher efficiencies than traditional modes of transport.

For example, Elon Musk's Boring Company has built an underground tunnel from its headquarters in Los Angeles to a parking lot about one mile away to test out its concept for using autonomous vehicles to transport passengers while bypassing normal above-ground traffic. Additional projects in Los Angeles, Chicago and D.C./Baltimore are currently under review. Virgin's Hyperloop One proposes a series of elevated tubes and underground tunnels that will use magnetic levitation to transport cargo and passengers at airline speeds. Its test track in Las Vegas is currently being evaluated before being tested by human riders. And Hyperloop Transportation Technologies (a U.S.-based

startup) recently signed an agreement to build a test track in China.

In comparison to traditional rail, hyperloop does present both economic and engineering challenges on the front end. However, developers are confident that a lower cost to consumers will make it worthwhile in the long run.

For information: The Boring Company; Web site: <https://www.boringcompany.com/> or Hyperloop One, 2159 Bay Street, Los Angeles, CA 90021; Web site: <https://hyperloop-one.com/> or Hyperloop Transportation Technologies; Web site: <https://www.hyperloop.global/>

teeth and hair) on their own.

The ability to pick up the phone in an emergency or leave the house if needed enhances personal security, and socialization is also increased by enabling a user to play games as well as interact more naturally with people and pets.

JACO currently lists for about \$35,000, and the cost is not covered by insurance providers. However, the developer is already working on a more affordable version.

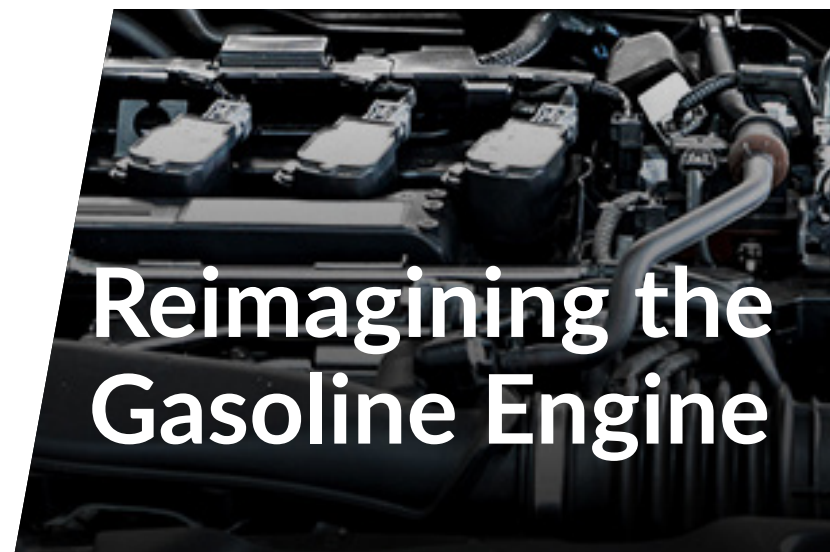
For information: Kinova Inc., 4333 Boulevard de la Grande-Allee, Boisbriand, Quebec, Canada J7H 1M7; phone: 514-277-3777; email: info@kinova.ca; Web site: <https://www.kinovarobotics.com/en>



Assistive Robotics

A new robotic arm is designed to be mounted on a power wheelchair to improve quality of life for individuals with limited or no upper limb mobility. Known as JACO®, it can interface to a variety of existing wheelchair controls – including joystick, sip-and-puff and head array systems – and utilizes the same wheelchair power source. It also mounts directly to the arm to minimize overall width and reach up to 36 inches (900 mm).

Six-axis movement corresponds to shoulder, elbow and wrist motion to more closely mimic a functioning arm. A two- or three-finger gripper allows users to do nearly anything that a human arm can do, and offers increased autonomy by enabling users to eat, drink and perform personal care tasks (such as brushing their



Reimagining the Gasoline Engine

A super-efficient internal combustion engine that weighs only 22 pounds could prove to be a more practical solution for cutting emissions than the all-electric vehicles currently being developed and sold. The free-piston linear engine has only one moving part (as compared to at least 20 that are found in a typical gas engine) and weighs about one-tenth as much. It takes 20 percent less fuel than the average car engine, although that could be increased to 30 percent with adjustments to the fuel injection system. The new engine also produces electricity as it burns fuel, making it ideal as a backup charger for a battery-powered car.

Although regulators insist that internal combustion is not a long-term answer to reducing emissions, the new engine could make a significant difference in the shorter term. Currently, electric vehicles account for less than 5 percent of vehicles being sold. By 2030, it's been estimated that 40 percent of cars will still rely on internal combustion engines, and an additional 23 percent will be hybrid vehicles. For this reason alone, the company believes there will still be a market for an integrated power train design that would reduce cost and increase driving range.

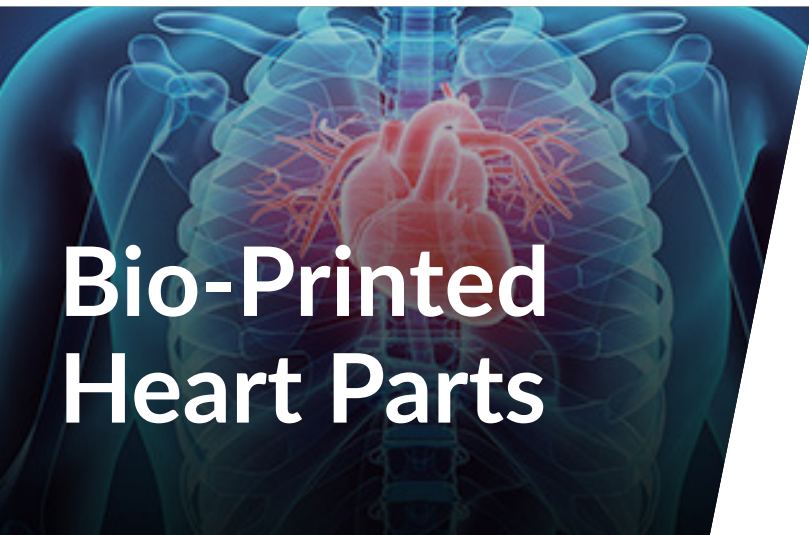
The free-piston engine is expected to be ready for market in less than two years. Since car manufacturers will not be able to adapt designs in such a short period of time, the engine will initially be launched in stand-alone power generators to replace the heavy, bulky and inefficient systems currently in use.

For information: Aquarius Engines Ltd.; Web site: <https://www.aquariusengines.com>

Nearly every type of tissue in the body contains a protein called collagen that provides structural integrity to the extracellular matrix of various organs. Collagen starts out as a fluid, making it impossible to print without support. But when deposited layer by layer within the gel, it forms a solid structure. Researchers were also able to reproduce anatomical features like blood vessels and valves using MRI data of a human heart. And when the collagen was combined with other heart cells, the resulting components produced ventricles that contract as well as valves that open and close.

Although it will require many more years of research to combine these components into a fully functioning heart, this represents a huge step forward in someday addressing the worldwide shortage of organs for transplant.

For information: Thomas Hinton, Department of Biomedical Engineering, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213; phone: 412-268-2000; Web site: <https://www.cmu.edu/> or <https://engineering.cmu.edu/organs/research/bioengineered-hearts.html>



Bio-Printed Heart Parts

Another breakthrough in 3D bio-printing has produced an array of heart components that could eventually lead to fully functioning anatomical structures. The key is a specially developed hydrogel that supports the biomaterials as they are being printed and can later be removed.



Gene Therapy for Parkinson's Disease

Although gene therapy has been successful for treating a wide variety of disorders, neurodegenerative diseases pose a unique challenge due in part to the blood-brain barrier – a layer of cells that is designed to protect the brain from pathogens and other toxins. But recently, an experimental

treatment that utilizes a harmless, non-replicating virus received a fast-track designation by the United States Food and Drug Administration to begin human clinical trials in patients with a specific gene mutation.

A gene known as GBA1 serves to prevent toxins from accumulating inside brain cells. When this gene is not functioning properly, particularly as people age, excessive inflammation may result in the neuro-degeneration that is seen in Parkinson's disease. Individuals with mutations in the GBA1 gene have as much as five times greater risk of developing Parkinson's disease, and it is estimated that 7 to 10 percent of all cases are related to mutations in this gene.

The new therapy uses an adeno-associated virus called AAV9 to shuttle engineered DNA across the blood-brain barrier and deliver a working GBA1 gene to the brain. The drug is designed to be a single-dose therapy that should ease symptoms caused by the mutation.

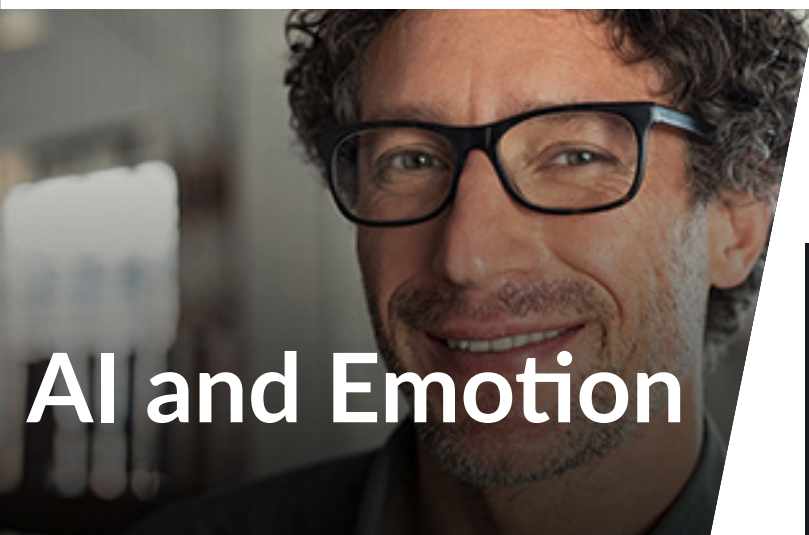
For information: Prevail Therapeutics, 430 East 29th Street, Suite 940, New York, NY 10016; email: info@prevailtherapeutics.com; Web site: <https://www.prevailtherapeutics.com/>

paper, they reported that their neural network – dubbed EmoNet – accurately and consistently categorized eleven different emotions.

EmoNet was “trained” on an existing neural network called AlexNet. In its original form, AlexNet allows computers to recognize objects, but the network was further refined to also predict what emotions would be evoked by certain images. These images were then fed into EmoNet, which was instructed to categorize them by emotion. The results indicated that craving or sexual desire was accurately identified more than 95 percent of the time, but the system was less accurate when presented with more nuanced emotions such as confusion or surprise. Simple colors also registered emotions: black elicited anxiety and red invoked craving. And when tested on categorizing movie clips as romantic comedies, action or horror films, EmoNet was correct 75 percent of the time.

Eventually, rather than simply asking a person how he or she feels, AI may be able to more directly measure emotion-related brain processes and even eliminate some of the labels associated with mental health. Less subjective labels could even lead to better treatments and interventions.

For information: Philip Kragel, University of Colorado, Institute of Cognitive Science, 344 UCB, Boulder, CO 80309; email: Philip.kragel@colorado.edu; Web site: <https://www.colorado.edu/> or <https://www.colorado.edu/today/2019/07/25/computer-system-knows-how-you-feel>



AI and Emotion

A team of researchers is working on a way to use artificial intelligence (AI) to decode human emotions. In a recently published

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Life-Size Hologram for Speakers, Educators, and Entertainers

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business development executive. Leading the international sales team that transformed the IMAX brand from a museum theater experience with 150 locations to a global commercial distribution channel for IMAX and Hollywood films with over 1,000 locations in more than 65 countries that generates over a billion dollars in box office sales each year, O'Reilly was uniquely poised to take ARHT's holographic telepresence technology to stratospheric heights.

While I personally utilize ARHT Media for holographic telepresence in giving keynote speeches around the world, they utilize their unique visual technology in other ways as well, including beaming in actors at movie premieres or award shows and also having 3D recorded content playing in retail locations or even at trade shows, explaining a product or service to the customers, a far more engaging experience than having a flat image on a monitor.

Outside of presentations and performances, ARHT also is pioneering the ability to beam in service industry professionals as well. This includes, but as an anticipatory thinker, I can see is certainly not limited to, medical services, educational and institutional services, social services, legal services, and governmental services. The bar is being raised seemingly every day in the world of technology; however, ARHT and holographic telepresence is taking the human aspects of the professional world to a whole new level.

Let's think for a second about how this could impact industries widely. It's safe to say that holographic telepresence, and holograms in

general, represent an increasing hard trend shaping the future of the presentation and performance industries, but in what way will they be disruptive? Likewise, in what way will they positively impact the industries they are most useful in?

In one way, they have the potential to solve a number of long-term problems, as well as create new and exciting experiences in the education field. Currently, at universities, professors commonly teach three courses a semester, with any additional ones being an overload. Universities scramble to hire adjuncts to take care of extra classes, naturally giving work to instructors who are looking to either break into college education or to teach in addition to what they do full-time.

Holographic telepresence being more widely used would drastically cut back on the need to manage and hire adjuncts, as it is entirely possible that while a professor teaches the main body of students for one of their three classes, a life-size hologram of that same professor teaching that same course could be beamed into another lecture hall, delivering the same content. There could also be pre-recorded versions that students could then reference at all times, making the course an independent study to some degree.

Given this innovative solution, how would an adjunct anticipate this happening and thus think of a way to be the disruptor instead of the disrupted? Perhaps they would go into business for themselves, offering their skills as an instructor to several colleges that offer similar courses, and then beam themselves into these classrooms for students all over the world simultaneously.

Now consider an industry that is seemingly always being disrupted: music. Since the dawn of the MP3 and digital downloads, artists have been portrayed yet again as "starving." As of today, streaming services offer infinite residual income,

as opposed to the risk of album sales dropping off; however, the trade-off is that that residual income is very small and amassed over time. Therefore, artists essentially live on the road, selling merchandise and performing constantly, much to their exhaustion and their family's disdain. So how could a band or entertainer be more anticipatory in their thinking of how to deal with the struggles of today's music industry?

Well, imagine a world where they could mix live performance with holographic telepresence. A band could perform live for select dates and perform as a hologram for others. There might even be a key performer who prefers all holograms due to illness, age, or other factors, performing live from their own studio to anywhere in the world, all while being able to interact directly with the audience in real time.

Aside from alleviating the travel woes of performance artists, consider the cost savings. It takes hundreds of thousands of dollars to put on a performance, which, yet again, takes away money from the artist. The artist could definitely capitalize on this technology financially by way of making ticket sales to hologram shows a bit less expensive depending on the setup; merchandise could come down in cost, and they could keep more of what they deserve for writing music we all love.

Of course, this concept, much like any innovative technology, always poses the question: Will it be as good?

Being a public speaker myself, I understand that many reading this right now may be skeptical of how this technology could be received. Likewise, many presenters and lecturers will likely consider the obvious: "My presentation would just not be the same if it's not in person." Believe me, nothing is more visceral than an in-person meeting, face to face with an audience or even one on one with a customer. However, the reality is, just as we saw in my example regarding the music industry, it is an impossibility to be

everywhere at once, and with the growing demand for instant gratification in the world today, how does an individual or entrepreneur who offers a service, presentation, or especially performance stretch themselves any thinner than they already are?

The answer is holographic telepresence coupled with human performance. I've always been passionate about making sure that every presentation I give, I customize to suit the client, audience, and organization's needs overall while identifying game-changing trends that will have a direct impact on my audience members. So for every person out there afraid that computers and robots will eliminate human beings, this is the perfect example of an incredible technology heading our way that requires us to still be human and merely facilitates our ability to capitalize in a more time-conscious way.

When a client wants me to deliver a keynote speech at an event, I now offer several options, as I mentioned above, including my regular live presentation. Being known as a technology futurist and disruptive innovation expert, it makes perfect sense that I demonstrate my expertise in my actual delivery of the presentation by beaming in using holographic telepresence technology. It is a true interactive experience. Special projection equipment and a technician will be on location at the meeting or conference, and all equipment will be transported and set up by one technician.

The world is always evolving, and technological disruption has always occurred; we are just noticing it now more than ever. However, if you pay attention to the hard trends that are shaping your industry, both inside and out, you'll start to anticipate what's to come and see new game-changing opportunities as well as being able to pre-solve your problems before they get out of hand.

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