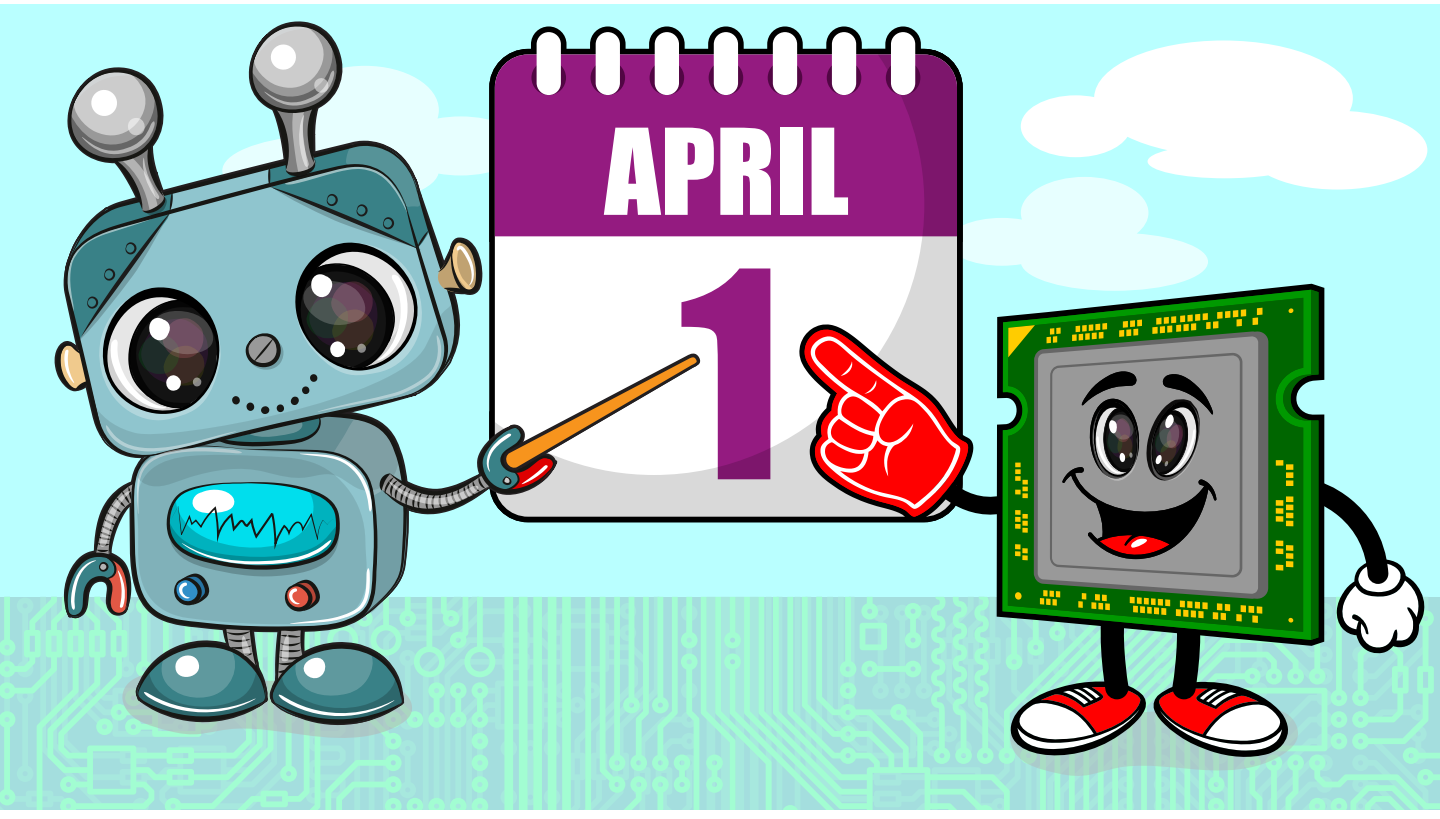


Vol. 1, No. 1

Difficult Concepts Explained on April 1st

"Humor. It is a difficult concept. It is not logical."

Lt. Saavik, Star Trek II: The Wrath of Kahn (1982)

WILLIAM WONG

Senior Content Director

Endeavor Media

We are living in interesting but trying times. A tiny virus has challenged the entire world, and everyone is now working to cope with COVID-19. Thankfully, technologies like the internet, video conferencing, and collaboration software is making it possible for many to continue to work and interact with others.

April 1st, aka April Fools' Day, has been celebrated for centuries. Its origins remain a mystery as do many new technologies. Tales have been twisted to entertain and bring levity as spring emerges.

So, while you may not believe in the "No-Win Scenario," you might believe in some of the technical tales we have collected here. They are from the best authors around, who will be bringing you news and insight about real world products and technologies—on April 2nd.

BILL SCHWEBER, Contributing Editor

Aerosol Delivers 5G as Mist, Solves Countless Technical Problems

An opportunistic vendor has packaged 5G-designated nanoparticles in a handy spray can, ready to easily resolve technical issues and overcome system constraints.

A leading provider of aerosols has packaged 5G mist in an easy-to-use spray can, claiming it can solve nearly all technical problems and even some social issues. According the Jack Sprague, CEO of The Mister Inc., he was inspired by how many references to this thing called "5G" he saw.

He noted that "It seemed whatever and wherever the technical problem was—whether V2V connectivity, super-fast file downloads, medical research, excess data-link latency, almost anything—the answer I saw was almost always this thing called 5G." That's when the proverbial light when on in his head, and he told the product-development team to get on the project right away, now marketed as "5G Fixer in a Can."

Whatever your technical performance limitations, the "5G Fixer in a Can" nanoparticle-based hype spray can minimize or eliminate it.

The first step, he said, was to license the 5G designation characters from 3GPP, the 3rd Generation Partnership Project standards organization that develops protocols for mobile telephony. "That was easy," he added, "since our efforts had no impact on their 5G technical standards and had no spectrum, format, or protocol implications."

Next, engineers tackled the more difficult part: They developed easy-to-manufacture nanoparticles in the shape of the 5G designation, internally code-named 5G-hype nanoparticles. These were then packed into a standard can pressurized by harmless nitrogen for convenient use and no safety issues.

Sprague continued, "Now, whatever your issue, whether it's a small, localized problem or even a broader system limitation, just a few shorts bursts of our 5G-hype spray will likely solve or reduce it." The real question, he added, is "what won't it solve?"

As an added benefit, the aerosol can is refillable from a larger supply to minimize wasteful trash and environmental impact, with a single large refill canister holding about 100X the volume of 5G nanoparticles compared the dispenser aerosol. "5G Fixer in a Can" will reach retail shelves in April and be available through major online sites. For situations where there are restrictions on when and how pressurized aerosols can be shipped, customers can buy the 5G-infused nanoparticles separately in bulk and have an empty can (also available) pressurized locally.

LEE GOLDBERG, Contributing Editor/Power, Electronic Design

Dark Emitting Diodes (DEDs) May be a New Tool in the War Against COVID-19

Researchers at YoYo Dyne Systems have discovered that the emissions from dark emitting diodes (DEDs) used in their military-grade active camouflage systems is highly effective at killing the coronavirus.

While dark emitting diodes (DEDs) are generally considered a niche product, used mostly for military camouflage and high-end custom lighting effects, they may also be a highly effective tool for combatting the coronavirus. A team of researchers at YoYo Dyne Systems had been experimenting with using high-intensity DED emissions as a bacteriostatic agent for sterilizing hospital rooms, operating theaters, and food-processing facilities when they accidentally discovered they had a similar effect on many common viruses. Preliminary tests indicate that the coronavirus is highly susceptible to their dark influence.

The DEDs used in YoYo Dyne's tests are actually Zener-enhanced DEDs (ZeDEDs), based on the original phonic buffering junction (PB&J), which enabled the company to produce the world's first commercially available DEDs in the late 1980s. The new devices employ a hybrid structure whose properties closely resemble a cross between a Zener diode and a Peltier-effect cooler.

YoYo Dyne, a defense contractor based in historic Grover's Mill, NJ, claims that the first products based on its new ZeDEDs produce 10X more darkness for a given input power level than the best UnDED (Unipolar DED) devices available today *(see "A Closer Look at ZeDEDs" below)*.

John Worfin, YoYo Dyne's director of research, said that they had originally discovered ZeDEDs' bacteriostatic effects when a technician left his lunch in the lab where they test and calibrate high-powered DED arrays used in military camouflage systems.

"When we discovered the lunch that Pat had forgotten a few weeks earlier, we expected to find a proverbial 'science experiment,' with Tupperware containers full of putrid food," said Worfin. "To our surprise, the mac and cheese, egg salad, and Jell-O salad were not rotten, and not much more disgusting

1. During our briefing at YoYo Dyne's labs, we were allowed to photograph one of the company's first production ZeDED devices. Note the integrated light sink and topro-flux coupling fittings, precisely aligned to maximize dark emission. (Courtesy of MGM Entertainment)

than the day Pat bought them to work. In fact, it took some convincing to keep Pat from eating them," concluded Worfin.

The team determined that the output of the high-intensity DED arrays being tested in the room had penetrated the lunch box and disrupted the metabolism of the bacteria attempting to establish a foothold on the food. After verifying the effect, Worfin directed the team to work with nearby Penn Medicine Princeton Medical Center to see if DED arrays could be used in a medical setting. Mobile sterilizers, equipped with large clusters of high-powered ultraviolet LEDs, are already being used by some hospitals to control bacterial infestations. However, they cause eye damage to anyone in the area not wearing eye protection. In addition, UV sterilizers can miss shaded areas that don't get direct exposure, and their light cannot penetrate containers or materials, such as bed linens.

Using the camouflage system's array as a makeshift test article, the researchers learned that DED emissions can only penetrate an inch or two of most materials, but colleagues from the medical center reassured them that it would be more than enough to make a big difference in a hospital setting. It was during those preliminary tests that, out of curiosity, the research team tested their effect on the coronavirus. "We were as surprised as anybody" said Dr. John B. Bootay, leader of the medical research team. "Those ugly little viruses can't stand the absolute darkness the DEDs generate. It's as if they have the life, or what passes for life in a virus, sucked right out of them," he concluded.

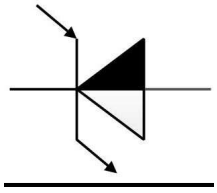
In light of the current medical crisis, YoYo Dyne launched a crash program to accelerate its schedule for putting its DED-based sterilizers into high-volume production. Their announcement that the first units would be available for sale before the end of April caught the industry by surprise, causing a rapid sell-off of stocks of several other LED manufacturers.

"This announcement even caught us by surprise," said John F. R. Cutbait, Chief Product Evangelist at YoYo Dyne, during an exclusive interview with ED. "We'd been planning on introducing our ZeDED sterilizer at the LED/MED 2020 Expo next month, but the COVID-19 crisis pushed things forward. But it wouldn't have been a secret much longer anyway since the stealth aircraft we've been working on with the Air Force that uses a similar technology hit the news yesterday afternoon," he concluded. (See the story "*Air Force reveals its new aircraft cloaking system uses dark-emitting diodes*" for details).

YoYo Dyne's ZeDED devices are available in several standard darkness ranges, with maximum output ranging from 10 to 150 snemul. Samples are available now, with volume production scheduled for 3Q 2020. Pricing is available upon request by contacting YoYoDyne Propulsion Systems at their web site: http://yoyodynepropulsionsystems.com/.

A Closer Look at ZeDEDs

ZeDEDs consist of a small semiconductor chip with a P/N junction coupled to an embedded quantum vacuum cavity.



2. The proposed JEDEC symbol for the Zener-enhanced dark-emitting diode. (Image courtesy of NliteN [1])

When reverse-biased, the cavity absorbs photons proportionally to the current flow through the junction. Unlike conventional UnDEDs, which can only emit darkness, the DED-Z junction has a bimodal structure *(Fig. 2)*. This allows them to emit light like a conventional LED when forward-biased and operate in DED mode when reverse-biased. In its DED mode, the ZeDED's junction undergoes a Zener-like breakdown from a highly efficient photonic extinction region that produces an extremely intense beam of darkness.

Thanks to their higher efficiency and compact form factor, YoYo Dyne's ZeDEDs have made dark-emitting technology a practical reality for several applications, including active camouflage for law enforcement and military personnel, as well as wealthy sportsmen. They're also finding applications in high-performance light shields that completely eliminate light pollution generated by streetlights and other outdoor lighting equipment.

ZeDEDs are also expected to find applications in theater, theme parks, or wherever the thrill of a spooky experience can be enhanced by hyperadrenalinosis [2], a condition frequently caused by the total absence of photons. NliteN, a company that develops and manufactures advanced SSL technologies, has already announced plans to address this market with products that pair their heatsink-less bulb IP with YoYo Dyne's ZeDEDs. An anonymous source said that their rather aggressive bulb darkness design target is around 40 snemul/watt (for those who are unfamiliar with the metric system, there are 2.54*pi saledNac per snemul).

Editor's note: Electronic Design *thanks YoYo Dyne Propulsion Systems for its cooperation and support in the preparation of this exclusive feature on the ZeDED technology. As part of the agreement that made this story possible,* Electronic Design *has redacted the most sensitive details and agreed to publish it as an "April Fools satire." To the skeptics who wonder if this is a joke or a conspiracy being perpetrated in plain sight, we say: "We report—you decide."*

Notes:

[1] A tip of the propeller beanie to the folks over at NliteN Inc. for providing the device symbol they developed for their own ZeDED products. The Oregon-based electronics manufacturer, which created the symbol, has submitted it to JEDEC for approval as a standard design element at their June 31st quarterly meeting.

[2] Hyperadrenalinosis—also known in street vernacular as STFOOY (Editor's note: the "F" is silent or sometimes muttered)

LEE GOLDBERG, Contributing Editor/Power, Electronic Design

NOVIDIA Announces Artificial Stupidity Tech—CEO Claims it Will Make AI Apps Smarter, More Creative

Artificial Stupidity (AS) technology promises to make AI applications "more creative, more human."

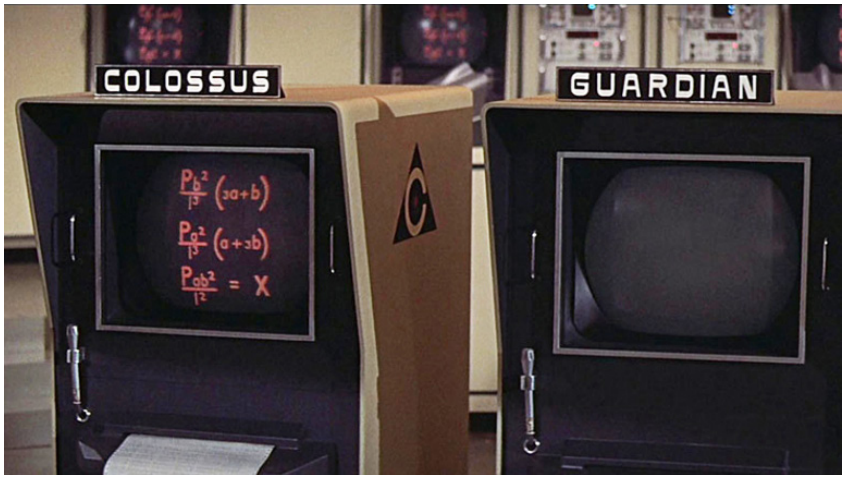
NOVIDIA, a leading developer of hardware and software used in the development of artificial-intelligence technology, announced that it's introducing a new series of products and software tools, based on the emerging science of "Artificial Stupidity" (AS). "Artificial Stupidity is not intended to replace AI, but to augment it," said Jason Wong, founder and CEO of NOVIDIA during a web-based tele-briefing held earlier today.

Wong explained that AS technology, which uses biomimicry algorithms to model the illogical and sometimes counterproductive behavior of humans and some higher primates, is being used by NOVIDIA researchers to soften the hard logic of AI systems. It's also being considered for the expansion of the optimization criteria used in decision and learning algorithms.

The principles underlying AS theory emerged from an experiment that attempted to solve some of the problems associated with generalized adversarial networks (GANs), i.e. the practice of pitting classical supervised learning AI algorithms against unsupervised learning algorithms.

"In many cases, having the two algorithms compete against each other to solve a problem while sharing their results can lead to more efficient, more complete solutions" said Dr. Aliana Maren, Director of Advance Research at NOVIDIA. "But GANs are very susceptible to erroneous training data which can mislead them and cause serious misclassification events. The math used to create digital models of stupid behavior suggested that adding AS to the mix might improve things, but there was only one way to find out."

For their experiment, the researchers created a GAN with a supervised algorithm code-named MOE and LARRY, an unsupervised learning algorithm. After a series of exercises that characterized the MOE/LARRY GAN's performance, they introduced CURLY, an algorithm generated using AS tech-



Early artificial stupidity experiments at NOVIDIA were conducted on separate computers, with the classical AI algorithms MOE and LARRY running on COLOSSUS, a platform containing 1,024 GPU processor elements. CURLY, the AS algorithm, ran on GUARDIAN, a platform consisting of pair of 90s era PCs, each running a dual-core Pentium processor. (Courtesy of Universal Pictures)

niques *(see figure)*. The three-way GAN proved to be enormously successful at solving problems, even with flawed or incomplete training data. In these cases, NOVIDIA scientists believe that CURLY's deliberately induced stupidity pushes the more constrained algorithms to explore possibilities that they would never consider themselves.

Although very promising, some problems still remain. For instance, there's the tendency for MOE and LARRY to gang up on the unsuspecting third algorithm and replace portions of CURLY's inference tables with what can only be described as the digital equivalent of slaps, head-butts, and eye-pokes.

Early results indicate that introducing controlled amounts of AS into AI applications can result in new, unexpected behaviors that some scientists have referred to as "Artificial Creativity." To make her point, Dr. Maren stunned the audience when she told them that "Rails on Fire," the soul-stirring rock ballad that had topped the pop charts for the past couple of weeks, had been composed and recorded by a competitive chess program they'd been working on, after they'd accidentally exposed it to an AS algorithm.

Other experiments with machine-learning systems have shown that using AS to expand the range and amplitude of the wrong guesses made by an AI system has the potential to greatly accelerate learning times, and make the resulting applications more resistant to problems from erroneous inputs caused by bad data or faulty sensors. Nevertheless, NOVIDIA researchers are proceeding cautiously when applying the new technology to mission-critical applications after an autonomous vehicle using AS algorithms modeled after an undisclosed high-ranking American politician suddenly lit itself on fire and drive off a cliff.

NOVIDIA expects to ship its first artificial stupidity system (ASS) hardware platform and a beta version of its AS software tool kit during the second quarter of 2020. Pricing has not been announced yet.

ALIX PAULTRE, Writer, Editor, Technologist

Novel Hybrid Watch Implements Latest Atomic-clock-on-chip Technology

Taking timing to the next level with a wrist-mounted atomic clock.

Ever since the mechanical watch industry recovered from the "quartz crisis" by migrating to the high end of the marketplace, we've seen a plethora of quirky, novel timepieces. With the added competition from smart-watches and other intelligent wearable devices, many of these companies began releasing mechanical-electronic hybrid watches. Some of the more exclusive watchmakers have even integrated high-horological complications into their hybrid timepieces.

A recent high-end startup in the watch industry has gone the final step in electronic hybridization, integrating the latest atomic-clock-on-chip technology into their latest opus piece. The Jewel-Oriented Kinetic Endeavor is arguably the most arcane and complex hybrid mechanical/electronic watch in existence, with near-perfect accuracy guaranteed by the chipscale atomic clock in its mechanism.

The hybrid movement also has an integrated 10-hz high-beat mechanical movement, with sensors constantly monitoring the beat rate, adjusting the mechanism with MEMS-based servos as needed to maintain accuracy. Additional micromotors drive the time display, and can change the characters in less than a tenth of a second to accurately show the time, even at the minute change. The company is still addressing issues with the power-management IC and micromotor used in the seconds display.

There are no hands, the watch uses articulated Dungeons & Dragons Dice to show hours, minutes, seconds, and the leap year. According to the designer, "I wanted to channel the joys of my youth into this piece, and everyone wants to recapture their youth. I think that $500,000 is a small price to pay for this wonderful expression of times gone by." The company offers a choice of dice and character colors for an additional $50,000 customization fee.

Currently the watch does require an external battery, because the complete system draws approximately 800mA in operation, due to the complexity of the movement. A discreet cable runs up the sleeve (there is also an attractive leather wrist covering available when wearing short-sleeve shirts) that runs into a belt-carried battery pack good for at least 40 hours of continuous operation before requiring recharging with its bespoke charging stand.

For more information please contact the Association Pour Réglementé Intelligence Logiciel Première.

BRAD THOMPSON brad.thompsonaa1ip@gmail.com

Support America's Strategic Vacuum Reserve– ACT NOW!

Before and during the military buildup to American entry into World War II, tremendous quantities of high-quality vacuum were harvested for use in vacuum tubes of all sizes and shapes. In the post-war era, demand for cathode-ray tubes for television receivers further depleted supplies of vacuum of high and medium grades.

Tragically, many wells supplying military-grade vacuum have long since been depleted, leaving only lower-grade vacuum salvaged from mining activities available to meet all demands.

Similar post-war concerns for shortages of petroleum for fuel and industrial processes led to establishment of the Strategic Petroleum Reserve (SPR), an emergency fuel storage of oil maintained by the United States Department of Energy. As the largest emergency supply in the world, the SPR can accommodate up to 727 million barrels of oil.

Recent events in the Middle East and the United States have called attention to rapid increases

in the consumption of even low-grade vacuum, mostly for political and theological applications. Researchers in the Pentagon and civilian think-tanks have awakened to the distinct possibility that obtaining decent vacuum of *any* grade may become difficult or impossible.

Noting stiff competition and higher consumption of vacuum by Chinese industries and military, the United States Vacuum Association, a trade association dedicated to restoring the previously-secure vacuum supply chain, has called upon the U.S. government to establish strategic reserves of high- and medium-quality vacuum.

While wartime vacuum repositories relied on sealed underground caverns left over from helium mining, intensive efforts are under way to render commercial and civic structures vacuum-tight to serve as interim storage facilities. Long-range strategic planning calls for multiple dispersed vacuum repositories to be located in or near areas of high demand and adjacent to current vacuum refineries.

Although unmentioned in news accounts, researchers aboard the International Space Station (ISS) are experimenting with techniques that allow compression and liquefaction of near-Earth medium-grade vacuum for shipment to Earth via returning Soyuz capsules. Speculative projections indicate that a space vehicle shuttling passengers and supplies from

Earth orbit to Mars could acquire and process large enough quantities of diamond-hard deep-space vacuum on the trip's return leg to significantly offset costs of the round trip.

As a vacuum user, your support for creation of the new Strategic Vacuum Reserve and upgrading of the few remaining World War II-era repositories is critical to the program's success. You can help by contacting your Congressional and Senate representatives and calling their attention to this issue.

Remember... a good vacuum is a terrible thing to lose. Write your Congressman TODAY!

(This announcement is cosponsored by the American Vacuum Tube Institute and the U.S. Council on Consumer Vacuum Products)