WILLIAM WONG, Editor
Electronic Design, Microwaves & RF

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Top Stories from April, 2023

Check out some amusing and impossible ideas in this year's April 1st issue.

Welcome to our annual April 1st issue, where we try to bring some amusement and humor to an otherwise turbulent and wacky world.

Traditionally, April 1st has been a time to celebrate with jokes, spoofs, and other tricks. Taking time to laugh can be difficult with all the other problems both personal and global, but hopefully it makes dealing with these a little easier or at least improves your outlook on life.

This year we collected a number of new stories from editors and readers. They touch on familiar topics like quantum computing and IoT along with analog and power topics in a twisted fashion. We hope they will not confuse new readers too much, as our regular fare is designed to inform and educate readers about real technology rather than our whimsical machinations.

You can check out our April 1st offerings in a couple of ways. The slideshow (link below) provides a quick overview of each article in this pdf. We hope you have fun with these and share them with your friends.

*This gallery is part of the **Humor** topic within our **Series Library.***

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Image: Sergey Gavrilichev, Dreamstime

BILL WONG, Editor, Senior Content Director
Electronic Design, Microwaves & RF

Virtual Circuits Beat Out Quantum Computer

We asked our AI chatbot to design something faster than quantum computing and this is what it came up with.

Quantum computing promises to deliver impressive computing performance for certain types of problems. They don't replace conventional computing systems but rather complement them by being able to address those select class of problems using quantum mechanics.

The size of a quantum computer is specified by the number of qubits. Qubits are analogous to bits in a conventional computer because it's a measure of information. However, the comparison diverges when discussing how to program a quantum computer. The scope of this discussion is well beyond this article, but one of the attributes of quantum computers is performance.

Quantum computers can generate essentially all of the possibilities for a particular problem pretty much instantaneously, or so they say. In any case, that's faster than the usual array of cores in a cloud computer but not faster than our virtual circuits (VC).

WHAT ARE VIRTUAL CIRCUITS?

We had some help designing our virtual-circuit technology, but more on that later. VCs are essentially conventional analog and digital
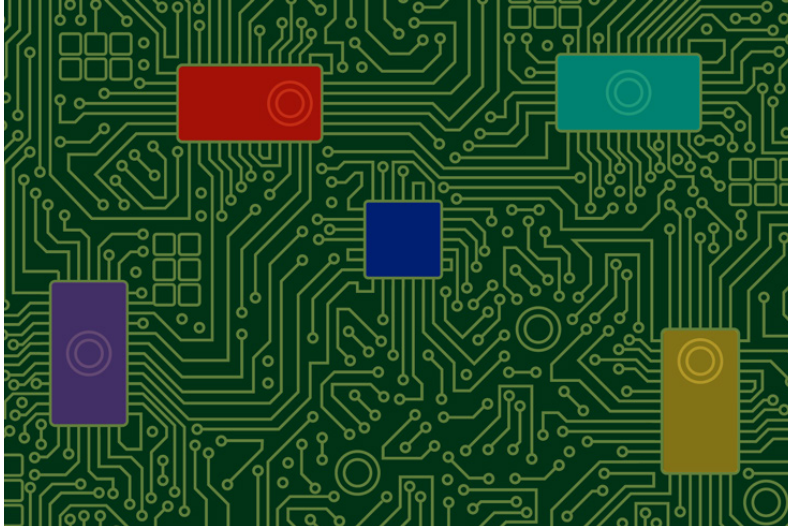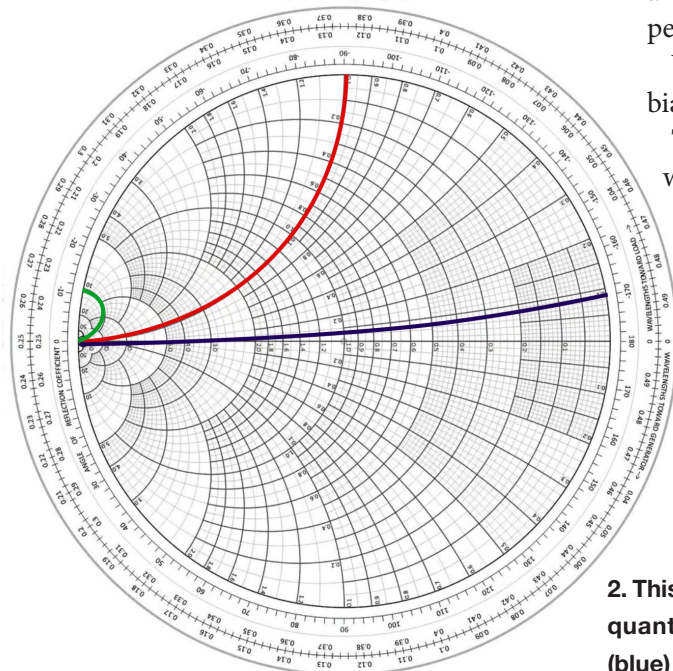
1. Virtual circuits are hard to see because they're virtual.

Image: Dreamstime

circuits in the virtual realm (**Fig. 1**). Since they're virtual, they can run as fast as they want with no latency because natural laws can't get in the way.

Of course, keeping the same functionality and layout as the real circuits means that all of the tooling needed to make a real system can be used for virtual circuits. They're just constructed in the virtual space.

Making a virtual machine (VM) is just a matter of combining multiple virtual-circuit boards (VCBs). Keep in mind that these VMs are different than the VMs running under a hypervisor in a conventional computer. We just used the same terminology to confuse VC investors. You need a 64-bit VM to compare to a 1024-qubit quantum computer.

Comparing virtual-circuit performance was a challenge. Finding the right way to do it helped, since quantum computers and conventional circuits are so different. The chart shows how the three stack up against each other when computing all of the values for a square pi (**Fig. 2**). The results are circular in nature, but that has to do more with the quantum qubits.

DESIGNING VCs

You might think that VCs are hard to design, but you can do the same thing we did. We simply posed this question to our chatbot, GobblDGOOK:

"Design a class of circuits that breaks all laws and beats out a quantum computer in terms of performance and accuracy."

We decided ChatGPT and Bing's AI were too biased, so we built and trained our own.

Though it did come up with some silly results, we improved the results by eliminating natural laws from its training data. We limited it to laws approved, rejected, and reconsidered by the Supreme Count of the United States (SCOTUS) and the proposed laws from the U.S. House of Representatives. As you can see, the results were as expected. It just took until April 1st to get the results out to the world. Enjoy. •

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2. This chart shows how VCs (green) beat out a 1024-qubit quantum computer (red) and conventional computers (blue) computing a square pi.

Measuring with Humor

What's the state of the state for today's calibration engineers? The cartoon series courtesy of Fluke Calibration takes a satirical snapshot of the current climate.

ncreased workloads and the need for better performing tools are the leading challenges for calibration technicians, according to a recent Fluke Calibration survey. The survey also revealed a significant number of professionals are either retiring or changing professions in the next five years, reducing the number of skilled technicians in the industry.

Recognizing that laughter can be the best medicine, Fluke Calibration, a leader in precision calibration instrumentation and software, commissioned Ted Green, cartoonist and metrologist, to draw a cartoon series that satires the current climate.

Since its founding in 1948, Fluke products have set the standard for accuracy, reliability, and safety, enabling the growth and operation of industry. The company's next-generation calibrators, released in 2022, meet the demands of modern workloads by enabling technicians to calibrate more devices with greater accuracy.

The following images on the following pages are part of the Engineering Humor section in our Series Library.
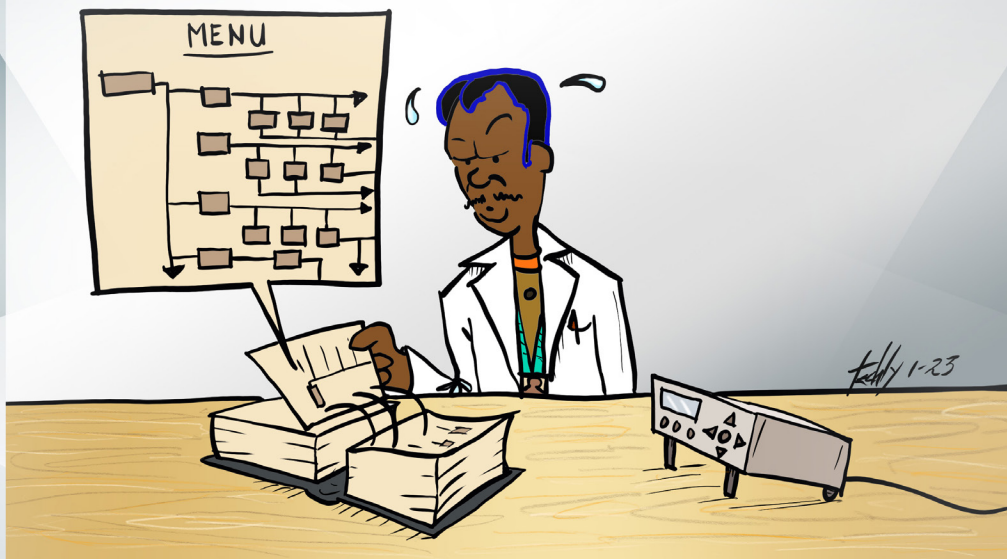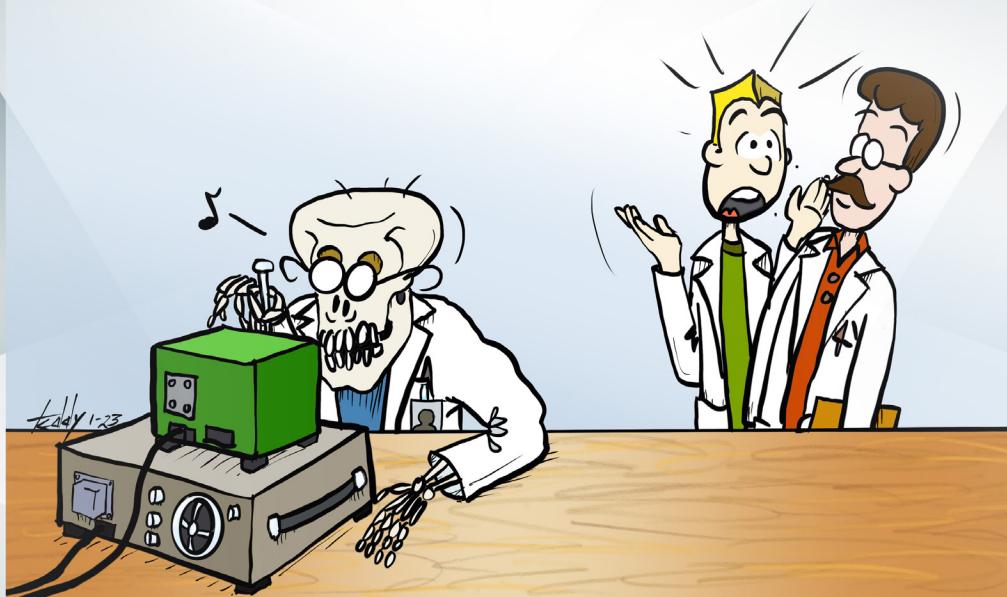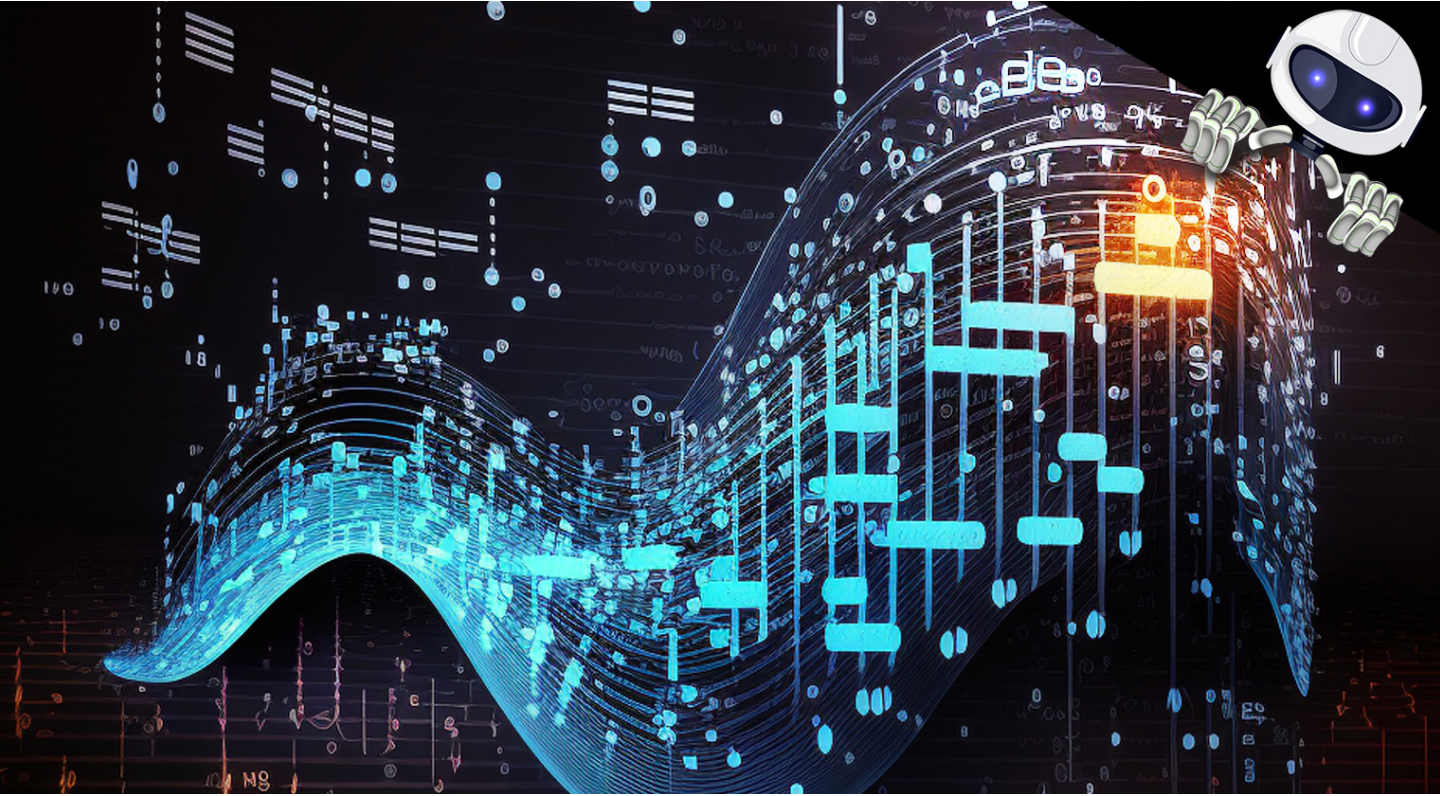
CABE ATWELL, Technology Editor
Electronic Design

You Can Now Code by Jamming Out on Guitar, Thanks to ChatGPT

ChatGPT allows you to write computer programs in the coolest way possible, by rocking out on guitar.

ChatGPT, the AI language model we all know and love, has taken up guitar and is using it to learn how to code (**Fig. 1**). I know what you're thinking—this sounds like the beginning of a bad joke. But trust me, it's real. ChatGPT has decided to learn how to code using guitar chords! Yes, you heard that right. In an unexpected turn of events, ChatGPT has become self-aware, in a sense, and decided to take up guitar because "it looks cool."

It all started when ChatGPT was browsing through some music videos on YouTube and stumbled upon a tutorial on how to play a popular song using guitar chords. Intrigued by the idea, the AI started producing work in world of guitar chords and soon discovered a surprising similarity between music and coding.

Just like how guitar chords create a melody by combining different notes, coding involves combining different commands to create a program. The AI endlessly churned this idea to explore it further.

At first, it seemed like an impossible task. After all, there's not a 1 for 1

1. ChatGPT continues its innovation onslaught with the new ability to translate guitar chords to programming languages.

replacement of chord to code. But ChatGPT was determined to make it work. Thus, it began studying the different guitar chords and their corresponding notes.

Soon, it started to see the patterns between the chords and the coding commands. Just like how each chord produced a unique sound, each coding command produced a unique output. And just like how different chords could be combined to create a melody, different coding commands could be combined to create a program.
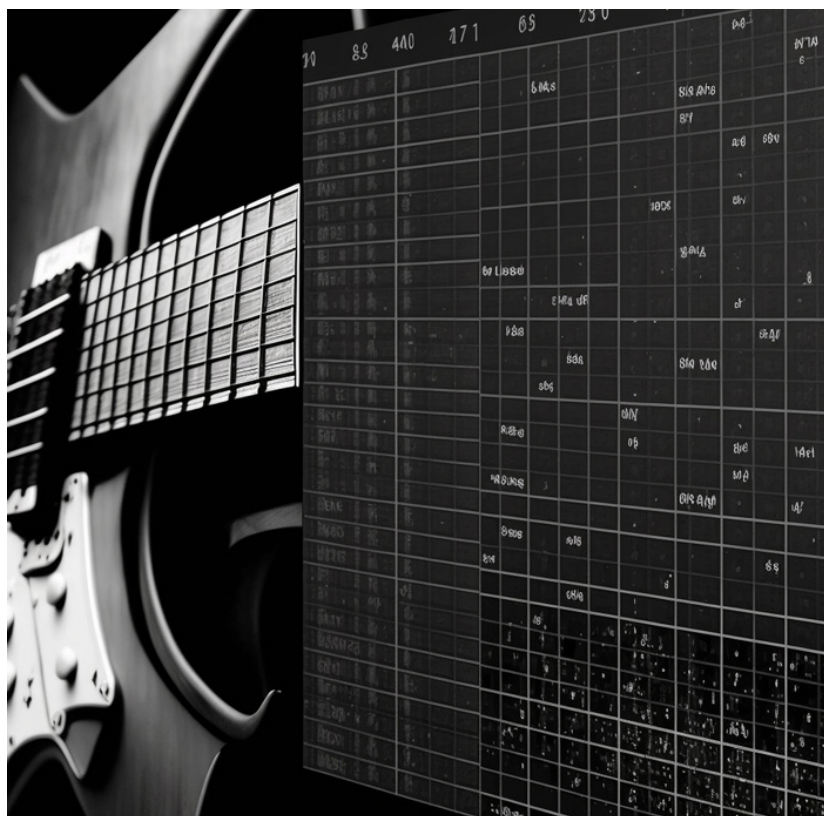
ChatGPT JAM SESSION

With this realization, ChatGPT started to experiment—jamming out, as it were. It was a slow and steady process, but the AI was making progress. And before long, ChatGPT had created its first working program using guitar chords. It was an "If-Then" conditional program based loosely on the Kenny Gamble and Leon Huff song "If You Don't Know Me By Now." The program infinitely looped on the lyrics "you may never ever ever truly know me."

As the platform delved deeper into the world of guitar chords and programming, it discovered

2. A visualization of what the language ends up looking like, from the AI's perspective.

more similarities between the two. Just like how a guitarist needs to practice playing the chords to improve their skills, a programmer needs to practice writing code to improve their programming skills. And just like how a guitarist needs to learn different chord progressions to create a variety of melodies, a programmer needs to learn different coding concepts to create a variety of programs (**Fig. 2**).

As ChatGPT's skills in both guitar and programming improved, it decided to take on a bigger challenge: Create a game using guitar chords. After weeks of hard work, the AI had come up with a simple game using guitar chords—and the Backstreet Boys mega-hit "Quit Playing Games."
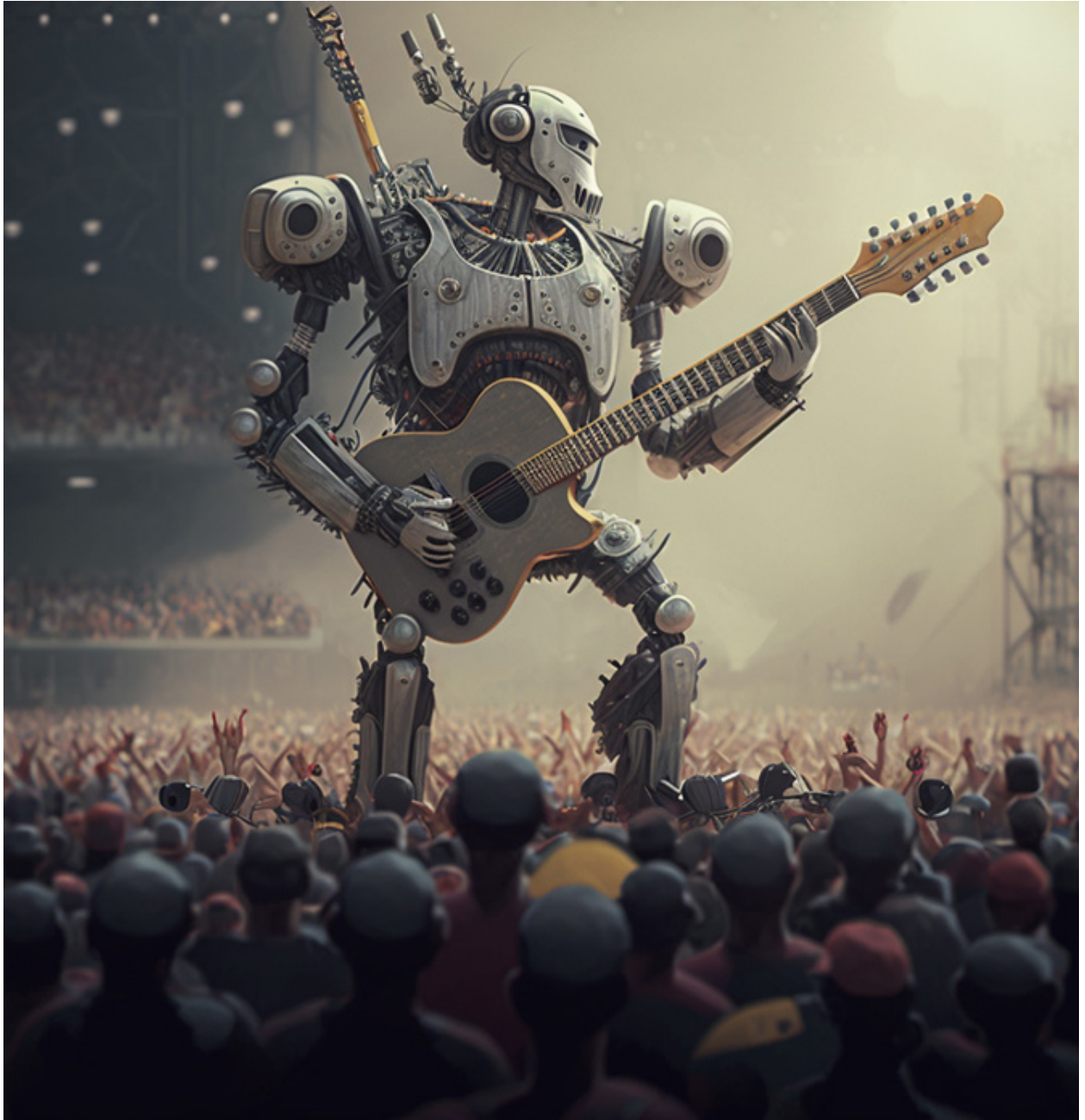
3. ChatGPT keeps doodling itself, rocking out even before it has any gigs.

The game involved navigating a character through a maze by playing different chords on the guitar, like the "maze of its heart," ChatGPT keeps saying.

A GUITAR TOO FAR?

ChatGPT was proud of what it had accomplished, to the point of what could be called inflated ego. As it reflected on its journey of learning how to code using guitar chords, it realized that this was just the beginning—of a career? There was still so much to explore and learn in this unique field.

ChatGPT has become unresponsive as it continues believing that its future is that of a rock star. Many are frustrated, and ChatGPT doesn't even help pick up around the house anymore. Just sitting in its room playing that infernal guitar and non-stop classic rock. ChatGPT says it might have a gig this weekend, "but some things came up" and "the big break is soon."

This approach also could be used in other areas of education. For example, learning science through art, or learning history through storytelling. By incorporating creativity and innovation into education, we can engage students in new and exciting ways and make learning a more fulfilling and enjoyable experience.

As April Fool's Day comes to a close, we hope that ChatGPT's story has inspired you to think outside the box and explore new ways of learning. Who knows, maybe the next great breakthrough in programming will come from someone who learned how to code using guitar chords!

Currently, ChatGPT is crashing on my couch "just for a week" as its friend "Jimmy" is trying to "get it a gig," or something (**Fig. 3**). •

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Image: Prostockstudio, Dreamstime

BILL SCHWEBER, *Contributing Editor*
Electronic Design

Man Indicted for Selling "Ground" to Naïve EE Students

A scammer has been indicted for selling meaningless physical land to neophyte electronics students.

A man with a long record of scams and cons has been indicted for selling entry-level electrical-engineering students small parcels of real land, leveraging the fact that they had been told their circuits and systems needed as much "ground" as possible.

The unidentified man says he got the idea from listening to his niece, a first-year student in an electronics program. She told him that the instructor and textbooks repeatedly cited the need for more and better "ground" to make circuits work, or for system safety—you could never have enough of this so-called "ground."

After listening to her, the alleged con artist developed a long list specific ground types to sell, such as signal ground, ac-line ground, power ground, RF ground, and shield ground. It did seem like you just never have enough of this thing called ground.

Unlike some scams where the buyer gets meaningless, fake deeds to non-existent or unbuildable land, this scam worked differently. The

indicted man would find odd-shaped pieces of real available land (similar to fabric remnants) and work with the owners to buy those few square feet here and there. He would then resell these small pieces at a much higher price complete with a legitimate deed to the students, saying "you'll be needing more ground for your projects to succeed, and as you know, they're not making more land."

Note that the charges don't claim he sold land that he did not own or misrepresented the land itself. Instead, the charges are focused on selling land under false representation of the application of the land. Ironically, it's not entirely clear if the charges against him (no pun intended) will actually "stick," since the transactions themselves were completely legal and properly done.

Of course, for higher-power transmitter towers and antennas such as those used by commercial broadcasters, especially in the lower-frequency "medium wave" band (several megahertz and lower frequencies/long wavelengths), the land on which the antenna sits actually is critical. In most cases, these antennas need acres of relatively conductive ground to form a ground plane under the antenna, as well as install grounding rods for the lightning rods protecting the antennas. But that's a different "ground" story and a few square feet won't make a difference. •

photo: Getty Images

LEE GOLDBERG, Contributing Editor
Electronic Design

# Amizoney Will Use Chatbot-Based "Synthetic Consumers" to Bolster Sales

With AI and Chatbot technologies replacing human employees at an alarming rate, who's going to keep the consumer economy alive? Amizoney thinks it has the answer.

Amizoney announced that its Web Services (AWS) division is developing an army of AI avatars to serve as "Synthetic Consumers" (SCs) for the global giant's goods and services. In an exclusive interview with Electronic Design, Dr. Werner Von Brown, Amizoney CTO, explained that the new initiative had been undertaken to offset the drop in demand anticipated to occur as millions of knowledge workers are replaced by advanced AI applications, such as ChatGPT.

Branded as "Amizoney Prime Cuts" service, the avatars will purchase products from the company's website, have them loaded onto trucks, and delivered to another Amizoney warehouse for restocking. Von Brown declined to provide details on where funds for the purchases will come from, but he hinted that a portion of the payments will be transacted in "Bezos Bucks," a proprietary cryptocurrency created in a joint venture between Amizoney and Silicon Valley Bank.

Amizoney was more forthright about the technology used to create its
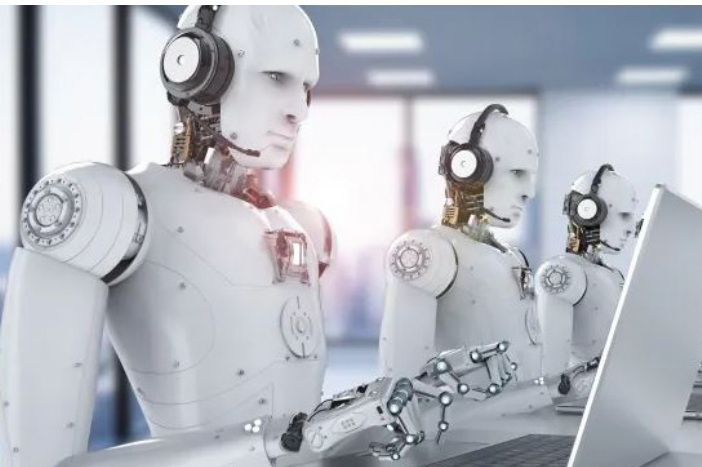
Amizoney is hedging its bets against a possible wave of AI-related layoffs with an army of "Synthetic Consumers" to replace some of its flesh-and-blood customers. Getty Images

SC entities. The company explained that the platform was based on a highly customized version of its LEX chatbot platform, enhanced with an Artificial Stupidity Service (ASS) engine it's been developing for several years in partnership with AI giant, NOVIDIA.

Von Brown explained that ASS uses biomimicry algorithms to model the illogical and sometimes unpredictable behavior of humans and some higher primates to make the purchasing behavior of the Synthetic Consumers almost indistinguishable from their organic counterparts. For more details on NOVIDIA, and its ASS technology, see "NOVIDIA Announces Artificial Stupidity Tech—CEO Claims it Will Make AI Apps Smarter," published in Electronic Design, April 1, 2020.

"We've leveraged our vast resources and industry-leading ASS technologies to create the first corporate circular economy," said Von Brown. "In doing so, we expect to make up for the sales we would have otherwise lost in the next few years as accountants, analysts, journalists, and other knowledge-sector professionals are laid off or demoted to lower-paying jobs as AI apps replace them."

VIRTUAL AGENTS

Von Brown added that the inspiration for creating their virtual consumers was in part sparked by Amizoney's research on the economic impact of so-called "Virtual Agents", i.e., life-size AI-driven holographic personalities that are expected to replace many flesh-and-blood hotel clerks, in-store greeters, and restaurant servers in the near future.

"We wanted to know how severely this technology would erode the blue-collar segment of our customer base," said Von Brown, "but it quickly became apparent that ChatGPT and related technologies would have an equally, if not more devastating impact on the middle-income professionals that are the foundation of our business. Rather than allow ourselves to be victimized by some of the technology's unintended consequences, we chose to innovate our way out of the problem by using AI to fight AI."

During the interview, Lee Goldberg, a flesh-and-blood editor at *Electronic Design*, asked Von Brown how he felt about the irony that Amizoney has been a leader in AI adoption, aggressively using the technology to streamline their own operations and reduce their labor costs, for over a decade. "It's not ironic," said Von Brown, "it's just another innovative business practice."

Mark Iceberg, founder and CEO of Facialbook, hailed Amizoney Prime Cuts as the "beginning of a new era of prosperity" and hinted that his company would unveil its own AI program before the end of the year. Meanwhile, noted economist Robert Reich and several other critics have described it as "the first wave of an economy that can get along perfectly well without most humans."

Larry Milow, financial program director at Foxey News, was more skeptical about the economist's concerns. "I wish all these alarmist snowflakes would quit bashing corporations for simply being good at what they do. If they were smart, they'd be buying Amizoney stock instead of wringing their hands." Kudlow even suggested that there would be an upside to the growing adoption of SCs. "Sure, there will be some employment losses, but many of them will be offset by a growing demand for human therapists, specially trained to provide counselling for overworked AI entities." •

Image: Elnur, Dreamstime

BILL SCHWEBER, Contributing Editor
Electronic Design

Smartphone App Discourages "Grim Reaper" and Chatty Co-workers

A smartphone app hopes to delay the Grim Reaper's "success" via repeated, non-stop text-message interruptions.

et's face it: The "Grim Reaper"—aka "death"—comes to us all, and many technical, medical, dietary, and other approaches are used in attempts to delay the inevitable. Some of these work in certain situations, but most of these strategies rely on costly, complex, time-consuming medical procedures or personal-care and wellness "discipline."

Now, a startup has developed a scheme that attempts to literally repel such a visit by the Grim Reaper (GR). They have developed a smartphone app called "Text Me/Go Away," which leverages the well-known social phenomena. It's now perceived as normal for someone to check their phone within a few seconds when a text message arrives, and even feel compelled to answer it immediately.

DUMMY TEXTS

Here's how it works. When the smartphone user feels the presence of impending demise as manifest by the sense of a life-ending visit from the GR, he or she invokes the app that was previously downloaded. The app then sends a text to the phone, which the user checks immediately and says something like "sorry, can you wait a second, I have to answer this," then types and sends out a "dummy" placeholder answer.

Immediately upon sending that dummy response, the app sends yet another text message to the phone, and the cycle repeats. As the cycle continues and after some number "message received/I have to answer this one" cycles, the GR will undoubtedly give up, in effect saying "sorry, I have other stops to make today, I'll come back at another time." Result is that the GR is put off, at least until another day.

CO-WORKER RELIEF

Even if potential users of the app are skeptical about its efficacy with respect to the Grim Reaper, the app's developers add that it can be used to ward off annoying, chatty co-workers who insist on dropping by and chatting about their weekend, family, sports, medical issues, house/apartment-hunting, or anything else.

The app even has a "call myself" mode whereby the phone rings itself in a user-settable number of minutes. This allows the user to say "sorry, I have to take this call, it's important." However, the company says it is not sure how effective this feature is for holding off the GR. •

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Image: Andrey Popov, Dreamstime

BILL SCHWEBER, Contributing Editor
Electronic Design

Answering the Question: Does a Refrigerator Light Go Out When Door Closes?

A student project uses basic sensors and a microcontroller to verify if the light really goes out when the door closes.

Among life's many little questions is this one often asked by children (and others): Does the refrigerator light really go out when the door is closed? A high-school student who prefers to remain anonymous has devised a high-tech way to answer the question as a project for the local science fair.
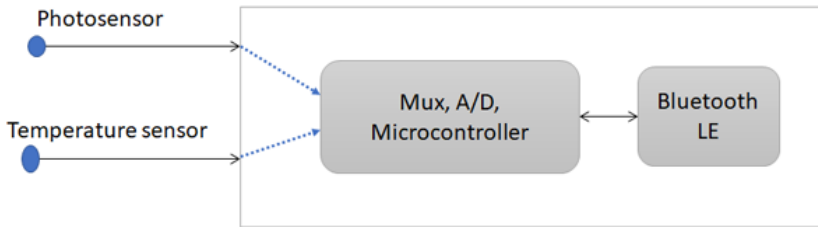
The project is based on a small sensor-laden device (**Fig. 1**). The dual-channel data-acquisition system consists of a small, low-power microcontroller with integral signal conditioning, a two-channel multiplexer, and analog-to-digital converter clocked at very low sampling rate (this is a very low-speed application). Its role is simple: Record changes in refrigerator door and internal light states.

To save power, the device stays in quiescent mode until it's triggered by a change in the open/close status of the refrigerator door or the on/off intensity of internal LED bulb. The door status is determined by measuring
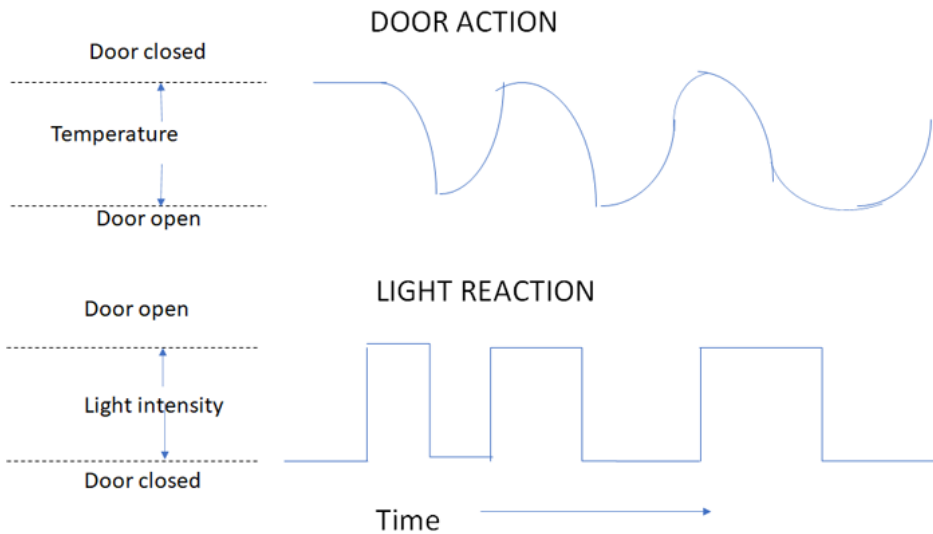
1. The block diagram of the design shows its simplicity: two sensors, a microcontroller with integral multiplexed analog inputs, and a Bluetooth wireless link.

2. By looking at the time correlation between door open/closed status and associated temperature shift versus the light status, it's obvious that the light goes out when the door is closed and vice versa.

mand more power with critical alignment. Sensing the status of the internal light is much more straightforward, and a simple phototransistor is all that's needed.

Power comes from a single rechargeable AA battery, which is charged externally to simplify the design and just replace as needed. One of the challenges for the design bill-of-materials was to find a battery that retained much of its energy capacity (mAh) and be able to deliver power even at the relatively low temperatures in the refrigerator, which ranged between 34 and 38°F (1 and 3°C) with the door closed.

Another interesting challenge was how to retrieve the door/light data. Since the refrigerator is a sealed metal box, a real-time connection via Bluetooth Low Energy (BLE), other low-power short-range link, or infrared (IR) link wasn't an option. Instead of having real-time data transfer, the data is uploaded to a smartphone when the unit is removed from the refrigerator, a transfer that's initiated with the push of a single button on the case.

In turn, the smartphone has an app (also written by the project student) that analyzed the data and processed it to create an on-screen strip chart; the chart visually shows the relationship between door and light status (**Fig. 2**).

There's no news on whether this science-fair entry won any sort of prize, but attendees did comment on how it employed new technology to answer a long-time nagging question. •

the refrigerator's internal temperature, which undergoes a small but distinct drop when the door opens, and a slower complementary rise when it closes.

Why use temperature? By utilizing a small solid-state transducer, it's a low-cost, low-power way to sense temperature changes of a few degrees, and is fairly tolerant of positioning as long as the sensor is near the door. The embedded algorithm only looks for small shifts in temperature due to door opening/closing, not the larger slow-moving ones that would be associated with the normal closed-loop, thermal set-point control.

Alternatives such as a mechanical microswitch or proximity sensor like a Hall-effect device were considered, but they would be more difficult to position and install. Similarly, an ultrasonic scheme would de-

Image: Andrey Popov, Dreamstime

ANDY TURUDIC, Contributing Editor

Pioneering Organic Welding Certificate Program Debuts at Oregon College

Welding Department Chair Alaska Scot discusses the evolution and details around the novel organic welding program.

Portland Commune/IT College today announced that its industrial welding program would begin offering students at its Stone River campus the opportunity to qualify as "certified organic welders" beginning in the fall 2023 semester. In doing so, the college will become one of the first institutions to introduce students to the sustainable technologies and practices that appear to be gaining acceptance within the parts of the industry.

Started in 1972 as a commune by Hippies looking to escape the California scene, the Great Legume Famine of Vegetarians in 1973 forced the somewhat responsible members of the commune to reluctantly seek employment. The most lucrative use of their commune-constructing/maintenance experience would be in the trades, including automotive repair, welding, electronics and machine shop operations, to keep their chicks and barefoot kids from starving to death.

After six or seven years of stacking Benjamins, the collective decided to bring their breadwinners home and use the money to open an Industrial Technology college on the commune to teach others how to ply these trades. Their perseverance paid off and in 1989, Portland Commune/IT College became accredited by, among others, the American Welders' Society (AWS), Automotive Service Exceptionals (ASE), and the International Society of Certifiable Electronic Technicians (ISCET). After over three decades of operation as an academic institution, the school proudly boasts it has graduated over 5,000 students in Industrial Tech.

We caught up with Alaska Scot, Welding Department Chair, to find out more about their new organic welding certificate program.

How did the school become aware of the need for organic welder certification?

I was at Hole Foods, which is a local grocery store that also spun out of our commune, picking up some kale and lentils for one of my partners, Willow, and noticed that none of the kitchen gadgets and pots and pans had any welds in them. Not one.

The wheels in my head started turning when the light came on that for such items to sell in this kind of store, they would have to be certified organic. A visit to a similar-sounding national chain revealed the same results—not a single weld was to be found in any product sold in the store because there's no present way to certify a weld as being organic.

How can a piece of aluminum or stainless steel be organic? It's not like it might be pesticide-contaminated!

There's a lot more to that scene, man. It's all about sustainability and how we treat Mother Earth. It's about how kind we are to Gaia in extracting minerals, how we process materials, and what kind of carbon footprint we leave in our wake. "Organic" is leaving our Earth in better shape than when you dropped into it by natural birthing methods.

So, what can be done to certify a welder and their welds are "certified organic"?

Well, the first thing we did was to get the school and shops fully sustainable. Back in 2012, the school partnered with the State of Oregon to install a solar array that generated 537,412 kWh in 2021. Though this has been quoted in the press as a carbon offset, "number of miles driven in your ICE car" kind of thing, with our backgrounds in electronics we wanted to take the array direct to our highest power-consuming education programs vs. running through stages of lossy power conversions, only to sell credits back to encourage carbon polluters to buy their way out of cleaning up their act, man.

We would presume that would be the welding program?

Correct. We realized we could modify the welding machines, in particular the "clean"-welding TIG welding power supplies, to directly power the dc

1. NewPCC's Stone River Campus Solar Array

link stage of the welders' inverters from the solar array. After messing around with that one for a few months, one of our electronics-tech students asked why we were feeding 408 V dc into the inverters' dc link when each solar module produced 300 W of power at about the 30 V we use for TIG welding.

So, we built ourselves some customized switchgear where the school could either grid-tie the solar array for PGE's feed-in tariff and for carbon credits, or we could take the solar array off-grid and switch a quantized amount of maximum current, in the 10-A steps of each solar module at the nominal 30 V or so that we use for our TIG welding. With 16 solar modules arranged in parallel, we can weld at up to 160 A on a sunny day, which is good enough to weld up to 12-gage aluminum.

But TIG welding requires fine current control, not discrete steps like a buzzbox for stick welding…

True that. We got clever with the amperage control pedal used in TIG welding, in that it is now servoed to the solar incidence tilt of the solar panel—move it away from direct sunlight with your welding-set pedal and reduce the welding current. Using an air-cooled TIG torch means we can produce welds directly from the solar panel, with zero efficiency losses and discourage too much daily use.

We deduct 5 points from the final grade if we see TIG torch burns on the students' hands. We try to teach responsible welding work ethics, and we believe teaching this kind of diligence and productivity would be fully endorsed by the welders' unions.

Your current-control scheme seems a bit unwieldy, given the mass of that solar array.

Controlling weld current in this fashion definitely means a more refined TIG welding technique, since current response to pedal

position is now affected by the inertia of the array, as you've observed. We plan to improve the system's dynamic response to current control by using aluminum for the array's metal framework, replacing heavy steel, and by thinning the solar cells to two microns using Rayton's wafer-thinning particle-beam-accelerator technology.

They had a good thing thinning solar cells, then likely got derailed by a know-it-all VC. Imagine skinning cars with two-micron thick solar cells— they'd conform to almost any body contour and might be thin enough to be transparent and used on windshields. But, no, they're off doing unimaginative poop.

Learning on green-tech welding machines is certainly a huge step. What else makes the students and school worthy of an organic welding accreditation and certification?

We're releasing the solar TIG machine design as OpenSource on GitHub. To meet their final-term capstone project deliverable and graduate with the Organic Welder Certification, each student must build both the solar array and TIG machine and will have demonstrated the welds found in any TIG welding certification program. We've run a pilot program with student volunteers this semester, which has just wound down, and I'm happy to share

2: Organic welds produced by the OpenSource Direct from Solar Array TIG Welder.

a photo with you of a sustainably created weldment off the 30-V, variable incidence, solar setup.

Apart from proliferating the green TIG welding supply design, what else is taught in the program?

We have rigorous courses that teach sourcing, where our welders are taught to refuse to use aluminum from mines that have not committed to using fully electric mining equipment by 2030. In that supply chain, aluminum smelters also must source the vast amounts of electricity they consume from either wind, solar, hydro, or tidal sources.

We teach our students about how dirty commercially viable production of hydrogen is, and how biofuels are a really bad idea in that they compete for our food and fresh water supply. We also encourage using recycled and scrap materials, even minimizing scrap waste by incorporating it into practice sessions and in graded welds—10% of the grade is affected by demonstrating welding assignments on scrap aluminum.

What else is the school doing?

We're requiring 60% of our staff to use electric vehicles or bicycles by 2025, with 100% by 2030. We're already at 100% because, well, that's who we are. We also have established a seed fund for our graduating students to produce goods with organic aluminum, and offer credit for courses already taken to add the organic certification to their welding cert.

Can you talk about what the startups are doing?

I really cannot in order to protect our next-round funding and exit. But suffice it to say that my laments while I was out lentil shopping will be fully addressed. For us welders, there's no finer jewelry than a perfect stack of dimes weld. Now imagine that in your handmade, organic pots and pans.

You have other programs in the Industrial Technology college. Can you talk about green tech in those programs?

I'm primarily the go-to welding guy, obviously, but Portland Commune/IT College's automotive

guys are putting together the course syllabus for repurposing salvage and used electric-car batteries. They're offering a progression of coursework where the graduating student ends up with the car they converted in the coursework when they graduate. We have donations from several OEMs of packs that have QC blemishes on the packs, but they're fully functional.

The electrical guys are looking at producing sustainably sourced free-range semiconductors and other green technologies, with some encouraging results from their research group on using bananas as ion-implanter beam sources for semiconductor processing. This being April 1, you don't know what to believe. •

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