Office *of* Research Innovation *and* Commercialization

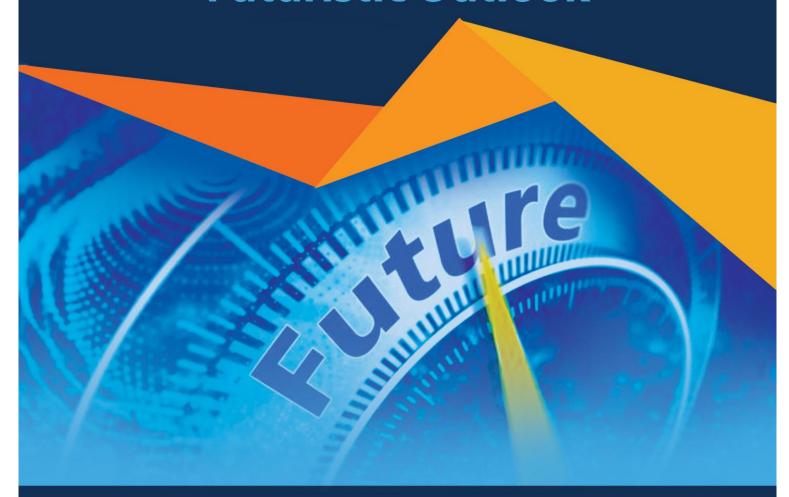Estd. 1990

NEWSLETTER

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Futuristic Outlook

Future

A Product of Office of Research Innovation and Commercialization (ORIC), University of Management and Technology, Lahore, Pakistan

Message from Co-Founder, Director-General, and Head ORIC – UMT

We live in the Modern age, where we do all over work with the help of technology. We know technology by the name "technological know-how". Discover the latest science and technology news and videos on breakthroughs shaping tomorrow's world with Futurism. The innovation of science has a long history producing many important figures and many developments in the field. Moreover, it made communication easier for us. Humans have cleaned up and created some fantastic and sometimes orthodox inventions.

For a long time, organizations have been experiencing various kinds of problems, resulting in their management exploring various changes to introduce into their mode of operation. Innovation and technology cycles have benefited organizations as they have assisted many organizations in perceiving the changes. Innovation refers to the incorporation of new functionalities into existing products and processes. As a result, an organization settles down to attain productivity.

So, every researcher and faculty member should be up-to-date about innovation in their respective field; that's why ORIC-UMT introduce the Futuristic Outlook for the UMT family to commensalism with the Innovative world.

Prof. Abid Hussain Khan Shirwani
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1: Lazy Scientists Botching Research with Machine Learning They Don't Understand

Machine learning systems have become increasingly popular in the world of scientific research, and it's easy to understand why.

The algorithms — designed to examine complex, wide-ranging datasets for patterns that could predict future outcomes — can save a great deal of person-hours, and many hope they'll even be able to find patterns that humans, through more traditional methods of data analysis, can't.

Impressive, yes. But machine learning models are so complex that it's notoriously difficult even for their creators to explain their outputs. In fact, they've even been known to cheat in order to arrive at a tidy solution.

Add that reality to the fact that many scientists now leveraging the tech aren't experts in machine learning, and you have a recipe for scientific disaster. As Princeton professor Arvind Narayanan and his PhD student Sayash Kapoor explained to Wired, a surprising number of scientists using these systems may be making grave methodological errors — and if that trend continues, the ripple effects in academia could be pretty severe.

According to Wired, the duo became concerned when they came across a political science study that, using machine learning-produced data, claimed it could predict the next civil war with a staggering 90 percent accuracy. But when Narayanan and Kapoor took a closer look, they discovered that the paper was riddled with false outcomes — a result, the researchers say, of something called "data leakage."

In short, data leakage occurs when a machine learning system is using numbers that it shouldn't. It usually happens when users mishandle data pools, skewing the way the model "learns."

After discovering the data leakage in the civil war paper, the Princeton researchers started searching for similar machine learning mistakes in other published studies — and the results, which they published in their own yet-to-be-

peer-reviewed paper, were striking. They found data leakage in a grand total of 329 papers across a number of fields, including medicine and social sciences.

"They were claiming near-perfect accuracy, but we found that in each of these cases, there was an error in the machine learning pipeline," Kapoor told the magazine.

As they explain in the paper, the proliferation of machine learning is resulting in something they're calling a "reproducibility crisis," which basically means that the results of a study can't be reproduced by follow-up research.

The claim raises the specter that a sequel could be looming to another serious replication crisis that's shaken the scientific establishment over the past decade, in which researchers misused statistics to arrive at sweeping conclusions that amounted to nothing more than statistical noise in large datasets.

If it holds up to further scrutiny, it'd be an extremely concerning revelation. Dead spider robots aside, most research isn't done for no reason. The goal of most science is to eventually apply it to something, in some way, whether it's used to carry out some kind of immediate action or to inform future study. A mistake in an information pipeline anywhere will frequently lead to follow-up errors down the road — and as it probably goes without saying, that could have some pretty devastating consequences.

According to *Wired*, Narayanan and Kapoor believe that the prevalence of machine learning mistakes in scientific research can be attributed to two things: the hype around the systems, and the lack of training provided to those who use them. The AI industry has been marketing machine-learning software that promises ever-increasing levels of ease and efficiency — and as Narayanan and Kapoor point out, that's not necessarily a good thing.

"The idea that you can take a four-hour-long online course and then use machine learning in your scientific research has become so overblown," Kapoor says. "People have not stopped to think about where things can potentially go wrong."

Of course, scientists can make mistakes without AI. It also doesn't help that machine learning can, in a way, feel pretty difficult to question, especially when both ease and efficiency are part of the sales pitch — after all, it's just crunching numbers, right? But as it stands, it sounds like researchers are likely making some serious errors not just *with* machine learning, but *because* of it.

That's not to say that AI can't be useful for scientific study. We're sure that in many cases it has been, and it will probably continue to be. Clearly, though, researchers who use it need to be careful, and really ask themselves if they

actually know what they're doing. Because in the end, these aren't machine errors — they're human ones.

2: Best Metal Detectors for Beginners

Metal detectors for beginners are great for anyone who's ever dreamed of stumbling on a secret goldmine. You don't need to invest hundreds of dollars to catch the treasure-hunting bug, and there are plenty of devices that are so easy to use that even kids can get in on the action. Unsure what device to get? Rest assured, there's a metal detector for beginners that's right for you.

— Best Overall: Bounty Hunter TK4 Tracker
— Best for Gold: PANCKY Professional Higher Accuracy Gold Detector
— Best for Kids: Bounty Hunter Junior T.I.D. Metal Detector for Kids
— Best Waterproof: SUNPOW Foldable Metal Detector
— Best Budget: Kuman Pin Pointer Metal Detector

How We Picked the Best Metal Detectors for Beginners

If you've seen a sitcom in the last 30 years, there's a good chance you've seen a metal detector. Why? Because it's impossible to not look a little goofy trying to use a weird divining device to find treasure at the beach, in the woods, or even in a backyard. Still, that doesn't mean that using a metal detector can't be a fun way to spend a few days, and after you've found your first piece of treasure, you may find yourself becoming addicted. Here are a few things we considered when picking out the best metal detectors for beginners.

Effectiveness: The earth beneath us runs fairly deep. And while we can't expect any metal detector for beginners to be able to detect what's happening on the other side of the globe, they should be able to detect metals below the surface, especially precious ones like silver and gold. The better machines will have modes to detect specific metals, which is always a bonus.

User-Friendliness: Do you need to have a geology degree to understand the readouts on your metal detector? That's not exactly friendly for beginners, is it? When a metal detector senses treasure, there should be little in the way of second-guessing. This doesn't mean interfaces have to be bogged down with tons of information, but they should at the very least be easy to understand.

Battery Life: Even basic metal detectors should be able to operate all day on just a couple of batteries. Replacing batteries in the wild isn't impossible, but it is annoying. The longer a device can run on a single set of batteries, the better.

Weight: It's not fun carrying a heavy device, especially when it's also large and cumbersome. Metal detectors should look heavier than they actually are, and holding them over the ground for hours should cause minimal strain.

Best Metal Detectors for Beginners: Reviews and Recommendations

Best Overall: Bounty Hunter TK4 Tracker

Why It Made the Cut: This easy to use metal detector is perfect for anyone new to the treasure hunting hobby.

Specs:

— Dimensions: 28.25 inches L x 10 inches W x 6.25 inches H
— Weight: 4.2 pounds
— Batteries Required: Two 9V (volt)
— Coil Size: 8-inch

Pros:

— Easy knob controls
— Great for coin hunting
— Reliable

Cons:

— Requires adjusting for false positives

The Bounty Hunter TK4 Tracker is a simple metal detector for beginners, but sometimes, simple is best.

The interface is fairly standard, especially if you've ever seen a metal detector before. It allows you to adjust the depth for what you're looking for, so you can pinpoint just what you're searching for, whether it's buried antiques or old coins. The eight-inch coil is even submersible in shallow water, so the Bounty Hunter is ready for all-terrain searching from the woods to the beach. After setting it up and toggling settings to minimize false positives, the Bounty Hunter TK4 is a solid starter metal detector that can last for years. It may account for why this metal detector for beginners ranks among the most popular models with serious treasure hunters.

Best for Gold: PANCKY Professional Higher Accuracy Gold Detector

Why It Made the Cut: A great battery life and a mode made to scope out jewelry make this metal detector a fantastic option.

Specs:

— Dimensions: 14 inches L x 8 inches W x 5 inches H
— Weight: 2.75 pounds
— Batteries Required: Two 9V
— Coil Size: 8-inch

Pros:

— Great LCD screen interface
— Runs up to 20 hours
— Works practically anywhere

Cons:

— Challenging assembly

While you don't need a gold detector to scope out the shiny stuff, the PANCKY Professional Higher Accuracy Gold Detector may just provide you with a gold-digging edge.

Firstly, the user interface in this metal detector for beginners is one of the easiest to read because of its bright LCD screen. Five different modes optimize not just how the detector works, but what it detects, including a mode just for jewelry such as bracelets, rings, and earrings. Like many other metal detectors in this

price range, the device runs on batteries. Unlike other detectors, it can run for up to 20 hours on two new 9-volt batteries. Not too shabby. Its versatility allows it to be used practically anywhere, including backyards, beaches, and even by rivers. That is if you can manage to assemble it. Users reported a tricky assembling process, but once it's up and running, the treasure-hunting potential is almost limitless.

Best for Kids: Bounty Hunter Junior T.I.D. Metal Detector for Kids

Why It Made the Cut: This kid-friendly option gamifies treasure hunting, and may just pull away the most staunch indoor kids outside.

Specs:

— Dimensions: 20 inches L x 10 inches W x 5 inches H
— Weight: 1.5 pounds
— Batteries Required: 2 AA
— Coil Size: 6-inch

Pros:

— Cute LCD screen
— Very user-friendly
— Adjustable length for all heights

Cons:

— A few too many false alarms

If you're new to metal detectors, you'd be surprised at just how many devices are made specifically with kids in mind. The Bounty Hunter Junior packs stellar features, considering it's a kid-friendly version of our overall best pick, the Bounty Hunter TK4.

This device cleverly makes its interface as kid-friendly as possible. When the treasure is close, three different smiley faces will flash as little adventurers get closer and closer. It can even be programmed to search for specific metals if your kid is really into copper or aluminum for whatever reason. The Bounty Hunter Junior will even tell you what kind of treasure the device is detecting, so there's no need to waste time digging for less-than-awesome treasure. Best of all, it's got an adjustable height to suit kids of all ages and sizes. The way it turns treasure hunting into a game may even get adults hooked. Of course, if your kid gets discouraged easily, this may not be the best device, considering it's notorious for false alarms. Still, it may get them outside, and that alone is worth the investment.

Best Waterproof: SUNPOW Foldable Metal Detector

Why It Made the Cut: Many metal detectors are waterproof in name only, but SUNPOW can get a little wet and still scope out treasure with the best of them.

Specs:

— Dimensions: 9.1 inches L x 1.6 inches W x 1.71inches H
— Weight: 0.2 pounds
— Batteries Required: 1 9V
— Coil Size: N/A

Pros:

— Very travel-friendly
— No assembly required
— Backlit LCD screen

Cons:

— Not optimized for taller folks

Just because a metal detector for beginners claims to be waterproof, we wouldn't suggest you go taking your devices out for a swim. The SUNPOW Foldable Metal Detector does provide a little more leeway when it comes to waterproof devices.

Its massive coil means you won't have to worry about missing a spot, even over puddles or shallow bodies of water. Unlike other devices that have to be assembled, this one is collapsible so it fits in most backpacks or even under your arm when you have to lug it home. The LCD interface is big, but it's also bright, so you can try treasure hunting at night, spooky as a prospect that may be. It's one of the most powerful metal detectors out there, and under normal conditions, can detect treasure up to 10 inches underground. It's practically perfect, but sadly, the experience isn't universal. If you're taller than the average bear, you may find yourself slouching to get this device close to the ground where it needs to be.

Best Budget: Kuman Pin Pointer Metal Detector

Why It Made the Cut: It's small, it's portable, and it's a little more cumbersome to use, but it's well within most treasure-hunting budgets.

Specs:
— Dimensions: 9.1 inches L x 1.6 inches W x 1.71inches H
— Weight: 0.2 pounds
— Batteries Required: 1 9V
— Coil Size: N/A

Pros:
— Easy to use
— Built-in LED flashlight
— Vibrates when it senses something

Cons:
— Incredibly barebones experience

So you want to start a treasure hunt adventure but you're not ready to make an investment. No worries: the Kuman Pin Pointer Metal Detector lets you get a taste of thrill for a very affordable price.

It doesn't get too far underneath, and getting this device close to the ground may require you hunching over, or getting on your knees. But aside from that, the device is fairly good at detecting metals just like the more expensive devices in this roundup. You can adjust sensitivity settings on the fly, and feel a buzz or vibration every time it senses something. Considering how easy it is to use, it's another great option for kids. A built-in LED light comes in handy when you want to truly pinpoint spots to dig, especially at night. That said, because it's more annoying to use, using it for serious treasure hunting isn't recommended. The price point truly can't be undersold though.

Things to Consider Before You Buy a Metal Detector

You Have To Love It: Like many get-rich-quick schemes, don't expect the cash flow to roll in after you start your metal-detecting adventure. There just aren't that many doubloons buried underground at this point, and certainly not at a public beach. If you're buying a metal detector to get a secondary cash flow going, you may find yourself disappointed after a few uses. After all, many things found underground are old, but not always valuable. If you're a fan of history, though, this is where a metal detector for beginners pays off, finding objects from the past including old coins, tools, and maybe even discarded Atari cartridges.

Optional Accessories (Including the Obvious One): Just about every one of our best metal detectors for beginner's runs on batteries, and depending on how much you use them, there's a chance you may run out of juice in the wild.

Luckily, taking a few spare batteries along with you is fairly simple, as most fit in any front pants or backpack pocket. Metal detecting requires an additional tool: a shovel. Once your device scopes out something, a good portable shovel like the RHINO USA Folding Shovel will dig it out of the ground.

Final Thoughts On Metal Detectors for Beginners

You don't need to drop top dollar on a fancy device if you caught the treasure-hunting bug. The best metal detectors for beginners are not just user-friendly, but fairly affordable. The Bounty Hunter TK4 Tracker is our best overall pick because it's reliable and user-friendly, but the SUNPOW Foldable Metal Detector comes a close second with its intuitive LCD control screen. For kids, the Bounty Hunter Junior T.I.D. Metal Detector for Kids turns treasure hunting into a game, and may just pull them off the couch and outdoors.

3: Best Speaker Wires in 2022

Speaker wires may improve the sound of your home audio system, home theater system, or car audio system. We use the term "may" because there's a lot of debate in the audiophile community as to how much your speaker cable actually impacts the sound of your system. Some folks say they can't hear any difference, while others say there's a profound change.

Speaker cables have made a subtle difference based on our experience testing a few sets, but we'd recommend spending a majority of your effort upgrading your source components (CD players, turntables, etc.) DAC (digital analog converter), and speakers or headphones first. Once you're pleased with your audio system — for the moment, at least — you can worry about upgrading your cables.

Speaker cables are an essential part of an audio setup whether you can hear a difference between a premium and budget-priced set or not, so here's how to get the best speaker wires to suit your needs.

— Best Overall: Austere III Series Speaker Cable
— Best Budget: Amazon Basics 16-Gauge Speaker Wire Cable
— Best for Outdoor Speakers: GearIT 14/2 Speaker Wire
— Best for Cars: InstallGear 14-Gauge AWG 100ft Speaker Wire
HOW WE PICKED THE BEST SPEAKER WIRES

Our speaker cable recommendations are based on in-depth research. Here are the factors we considered:

Materials: The speaker wires we're recommending are made out of either 100 percent copper and copper-clad aluminum, which is typically abbreviated to CCA. Copper is heavier and more expensive, but can transmit data (in this case music) more effectively between your amplifier and speakers.

Gauge: A speaker wire's gauge refers to how thick it is. Lower-gauge speaker wire is thicker, which makes it more noticeable and cumbersome to work with, but can carry more information from your amp to your speakers.

Length: The speaker wires we're recommending come in spools of varying lengths, and you should measure how much you'll need for your audio setup before making a purchase. You'll be able to cut the speaker wire to the appropriate length for your project.

Shielding: Speaker wire is protected by an outer layer that prevents it from getting damaged when it's moved around. In most cases, this outer shielding is made from plastic, which is both durable and flexible.

4: Fired Engineer Says He Begged Google to Test Whether Experimental AI Was Sentient

Back in June, former Google engineer Blake Lemoine decided to go on record with The Washington Post to make an extraordinary claim: that an experimental Google chatbot called LaMDA had become, in his opinion, sentient. A mind-bending he-said, she-said saga followed — at one point, the AI had even reportedly a hired lawyer. In the end, the company fired Lemoine.

But now, in a new interview with The Guardian, Lemoine — who has maintained that his beliefs about LaMDA are based in religion, not science — is claiming that he never set out to convince the public of LaMDA's sentience.

Rather, he now says, his intent was just to raise awareness about advanced AI technologies, regardless of any perceived sentience — and how little say the public has had in their development.

"I raised this as a concern about the degree to which power is being centralized in the hands of a few, and powerful AI technology which will influence people's lives is being held behind closed doors," he told the paper. "There is this major technology that has the chance of influencing human history for the next century, and the public is being cut out of the conversation about how it should be developed."

The reversal does raise the question of whether Lemoine's conviction has been shaken by his many critics. Supporting the reading that he was quite serious about the sentience claims while still at Google is a new revelation from the Guardian interview: that for several weeks before he decided to go to the press, he repeatedly urged the tech giant to run some experimental sentience "tests" on the chatbot. Google — which has maintained throughout the saga that Lemoine's claims are unfounded — refused, according to the fired engineer.

Upon Google's refusal to develop those tests, Lemoine told the Guardian that he felt he had no choice but to go public. Not necessarily to spread the gospel of sentience, as he now tells it, but to blow the whistle on a powerful industry with the capacity to make big — and in some cases, maybe not so great — changes to our everyday existence.

Of course, part of the issue with asking Google to run sentience tests is that none yet exist. Sentience has a dictionary definition, sure, but it's still an ethereal concept — neither philosophy nor science have any firm grasp on how, exactly, to define it.

"It's a very vague concept in science generally," Michael Wooldridge, a professor of computer science at the University of Oxford Wooldridge, told the Guardian.

Though Wooldridge told the paper that he doesn't think LaMDA is sentient, he did say that he agrees that the AI industry has a wider problem with what he calls "moving goalposts" — in short, referring to the reality that not even those building these devices seem to have a firm grasp on how a lot of AI algorithms function, nor is there a reliable way of measuring their efficacy.

"I think that is a legitimate concern at the present time," he added, "how to quantify what we've got and know how advanced it is."

Google has repeatedly defended LaMDA, arguing that the tech is safe and ultimately will be applied in a number of useful and necessary ways.

But while these systems certainly have some practical uses, the potential for misuse seems undeniable. After all, they literally talk back to us. That makes them easy to anthropomorphize, and thus form influential connections with — connections that, some researchers believe, may be easily exploited.

"I worry that chatbots will prey on people," Margaret Mitchell, a former AI ethics researcher at Google, recently told The New York Times. "They have the power to persuade us what to believe and what to do."

In the end, no one really knows for sure either way — not the people building them, and definitely not the public. And sentience or no sentience, that seems to be Lemoine's point, at least these days. About LaMDA, of course, but about the greater landscape of AI development as well.

"What I'm trying to achieve is getting a more involved, more informed and more intentional public discourse about this topic," Lemoine continued to the Guardian, "so that the public can decide how AI should be meaningfully integrated into our lives."

"We have one possible world in which I'm correct about LaMDA being sentient, and one possible world where I'm incorrect about it," he added. "Does that change anything about the public safety concerns I'm raising?"

Sure. All fair. Still, while it's hard to disagree with a lot of these new statements, it also seems like Lemoine is attempting to rewrite pretty much everything he's previously said — which makes it equally hard to take any of it seriously. Plus, well, Lemoine's been known to cherrypick.

5: Create Your Own Miniatures at Home with the Anycubic Photon M3 3D Printer

Whether you're an artistic type, an analytical problem solver, or in a dynamic field that requires a refined touch, you're likely to find numerous benefits in 3D printing. These innovative tools have been on the market for a long time, and somehow people are still finding new uses for them.

Created back in the '80s with the intention to advance prototypes in manufacturing, 3D printing has since made an incredible impact on countless other industries; be it in dentistry, medicine, education, automotive, and really everything in between. By layering materials (such as plastic, metal, carbon fiber, resins, and many others) over each other and fusing them together with methodical precision, a 3D printer can easily create your desired pieces while you sit back, relax, and brainstorm about what you'll print next.

I began my 3D printing journey several years ago when I bought a Monoprice open-frame printer. Since then, I've been able to use 3D printing as an artistic release, as well as engineer things that have had a direct benefit to my life and others'. Early on, as I was getting out of my car, I noticed a small plastic piece of my door handle had fallen off. I didn't know what it was, or how to even search for a replacement online. After taking some measurements, I was able to replicate this piece with my 3D printer and in a matter of hours, had replaced it with ease — something I would have never been able to do by hand.

Whether I'm creating bag tags for the youth soccer team I coach to create a sense of unity, prototyping useful tools with friends, or experimenting with new designs, having a 3D printer has paid for itself many times over. Lately, I've been testing out the Anycubic Photon M3 3D printer, and have been thoroughly impressed by the speed, silent printing, and incredible detail it's capable of. Having tried out several models and builds, I can say without a doubt that this is a 3D printer seasoned professionals would appreciate, and newcomers to the resin-printing field could happily take a crack at.

WHAT IS THE ANYCUBIC PHOTON M3 3D PRINTER?

Specs:

— Dimensions: 10.6 inches L x 10.1 inches W x 16.7 inches H
— Weight: 15.4 pounds
— Compatible Materials: Resin
— Print Volume: 6.4 inches L x 4 inches W x 7.1 inches H
— Print Speed: Up to 50mm/h

Anycubic has made a name for itself among the 3D printing community as one of the leading manufacturers for DIY printing. Though they've been around since only 2015, they've become known for developing top-of-the-line 3D printers for home use and for regularly improving their users' experience.

FIRST IMPRESSIONS

The Photon M3 comes equipped with just about everything you'll need to get started, however I'd suggest adding on the resin itself to your order. In addition to the printer, Anycubic included gloves and a mask for safety purposes, a scraper, a screen protector for the LCD monochrome screen, a resin vat, tool kit, USB memory stick (as this printer doesn't have WiFi compatibility), a user manual, and a funnel so you can pour your material back into the bottle when you're finished with it. In terms of what you get for the price, the box was surprisingly full.

The 3D printer itself came together in a breeze. In fact, it took me longer to remove the packaging and initially check out all of the items than it did to assemble the printer, needing only four hex bolts and three thumb screws. Just a few minutes later, I'd finished setting up the leveling and Z-offset wizard, and was ready to take it for a whirl.

The Photon M3 is the first resin 3D printer I've tested, and it differs greatly from any fused deposition modeling (FDM) printer out there. While filament, used in FDM 3D printers, is a solid material that often comes wrapped around a spool, the Photon M3 uses resin. Resin is a liquid solution that solidifies after photocuring with UV light.

Comparatively, the Photon M3 can do far more in terms of pristine, unrivaled detail than any FDM printer could. 3D printers that use filament often build from the bottom up, melting and depositing layers of what's essentially plastic strings of material. This method, though popular, often doesn't produce the high-quality detail that resin does, and can lead to "stringing" (when artifacts and small strings are left on your printed piece, even after cleaning it up).

How the Photon M3 differs from this is, firstly, that it builds itself upside down (from the top up). The resin, like filament, goes on one layer at a time, but is cured between every layer for optimum efficiency and quality. I have never been able to create a realistic LEGO brick with an FDM printer, but with the Photon M3, I was able to print several compatible pieces that could seamlessly clip on to my other LEGO, despite a little bit of elephant foot. No matter the level of detail or difficulty, with every piece I threw at the Photon M3, the end result was always

a clean, smooth, and slick structure. It truly seems like there's nothing it can't print.

Not only is the 3D printer amazingly speedy and quiet, but I was honestly astounded by the level of detail the Photon M3 was capable of. Having tested it out with some "Settlers of Catan" tile models and comparing them to the same file printed with an FDM printer, the comparison was mind-blowing. Not only is the Photon M3's finished product clean and smooth, the tiniest details were visible — which was especially impressive on a tinier model.

Something to note is that your builds will be a little smaller than you may be used to, with a maximum build size of 6.4 inches L x 4 inches W x 7.1 inches H. For comparably priced filament printers, you would expect at least a couple extra inches to work with, but this is easily made up by the level of detail your models will showcase.

The way the Photon M3 accomplishes these near-exact masterpieces is down to the cleverly crafted screen, plate, high-functioning software, and of course, the use of resin. The build plate dips into the resin vat at your current build level, then the screen projects what one layer will look like. After completing this layer and setting it with UV light, it lifts up and goes back down to do another layer; this process repeats until the build is finished.

LCD Monochrome Screen

Something that sets this 3D printer apart is its LCD monochrome screen. Where other resin printers often employ a laser projection, the screen mounted on the bottom of the Photon M3 exposes each layer and then prints them on in succession. This feature, incorporated with the user-friendly software, led to a higher-quality surface finish and enabled impeccable detailing.

The included screen protector is such an important component here, as it keeps your LCD screen scratch-free and allows for a longer lifespan. The LCD is so essential to the entire operation that you want to ensure it's protected. If your screen protector becomes damaged, you can easily strip it off and put another one on — whereas the screen itself would be a bit trickier to replace.

The front LCD screen and fully compatible Slicer software are also a very nice touch and I found it super easy to use. Once you've inserted the USB drive and you select your file to print, the screen shows you a preview of what the build will look like — something I've not experienced with any 3D printer before. This is especially helpful for those of us who have a poor file-naming convention. Even though the Slicing software wasn't the typical Cura that I was used to, it was easy to navigate.

SPECIAL FEATURES

Laser-Etched Print Bed: Anycubic put a lot of thought into every aspect of this 3D printer, down to its special design of the print bed. This crucial piece of the Photon M3 is laser-etched to create a strong adhesion and keeps your builds from falling off as they're printing. This is especially handy for heavier models that are more likely to lean or fall out of place, however it is very difficult to remove smaller items from the print bed if there's a large surface area in contact with it.

Printing Capabilities: At 50mm/h, the Photon M3 is wicked fast. At this pace, it only takes two and a half hours to print a 12-centimeter-tall model, which is significantly faster than other leading 3D printers. And for its unbelievable speed and accuracy, the volume at which it operates is incredibly quiet. This may be partially due to the fact that there are very few moving parts in this printer compared to others. There's only one screw that moves the plate up and down, whereas with a typical filament printer, there would be more armature, and you'd need to maintain the belts and ensure everything is lubricated properly. With this in mind, the Photon M3 requires very little maintenance and gives you more time to focus on your creations.

DRAWBACKS

Something that's undeniable about this 3D printer is that it stinks. Literally. Because of the fumes, you won't want to be in the same room while it's running unless you have an air purifier, so it's important to place it in a well-ventilated space that you're able to walk away from for some time. Thankfully, you can place the hood on it while it runs to keep in some of the smell, as well as to protect your prints from outside UV lights.

Another drawback that's specific to using a resin 3D printer is that you're stuck with a solid build volume. Filament printers can be specified so that your infill is only 10 to 20 percent for example, so you're able to make a hollow shape and save your materials for purely visible and structural aspects. Because of the way a resin print needs to be supported, you can't make any hollow pieces — this would also lead to trapped, uncured liquid inside. This makes resin printing more costly, as you'll go through more material. Although it's less economical, you'll always end up with a flawless, durable model.

Finally, resin printing is messy. When you pull your piece out of the printer, it's steeped in a liquid that you will need to clean off in a water rinser. To make this step easier, you can get water-rinse resin or high concentrated isopropyl alcohol. Once your item is clean, it needs to be cured in the same machine. It's very easy to wipe off, but you'll be messier than if you were to use a filament, and will want

to ensure you're working in an area that can get a little dirty. For the print quality though, this is a fair tradeoff.

While the Anycubic 3D printer is extremely efficient and capable of replicating some of the most complex designs, you may want to consider adding on a few more products to make your experience the best it can be.

— AirPure Air Purifier
— Water-Wash Resin
— Extra Screen Protectors

FINAL THOUGHTS ON THE ANYCUBIC PHOTON M3 3D PRINTER

Overall, my experience testing the Photon M3 3D printer was great. I'd wholeheartedly recommend it to those looking to add resin to their arsenal or newbies in the resin field, but it's not necessarily the best pick if you're completely new to 3D printing. This is an excellent choice for making toys, figures, or models for "Dungeons and Dragons" and other tabletop games.

Anycubic is really ahead of the game. I didn't feel like I was really giving anything up, and for such high speed, precision, and low cost, I'm blown away.

6: People Bullied Mark Zuckerberg So Much That He's Improving the Metaverse Graphics

Facebook-turned-Meta CEO Mark Zuckerberg recently took to Facebook to show off his likeness inside the company's VR playground Horizon Worlds — and the meta-selfie was so laughably bad that the internet united in dragging him.

Now, Zuckerberg appears to have taken the criticism to heart and is — in a very literal way — trying to save face. To wit, the CEO took to Facebook and Instagram to post new screenshots and promise "major updates to Horizon and avatar graphics."

"Also, I know the photo I posted earlier this week was pretty basic — it was taken very quickly to celebrate a launch," he wrote in the caption.

The new selfie — the graphics of which, to be clear, have not yet been deployed in Horizon Worlds — does have much more texture and shading than Zuckerberg's infamous selfie.

But whether that will be enough to sway the general public on the concept remains to be seen. So far, the company has faced an uphill battle in its efforts to sell its VR venture as a fun new way to be social online.

Zuckerberg's original selfie showed a lifeless cartoon head sheepishly staring into the void in front of soulless representations of the Eiffel Tower and a landmark Spanish cathedral.

The image was so devoid of any sense of identity or design that it forced the question: is this really the best that one of the most powerful companies in the world could come up with?

"When your core product looks like the painted walls of an abandoned daycare center you have to wonder," one Twitter user mused.

A different user called it "eye-gougingly ugly" while pointing out that "Meta's metaverse ploy is surely dying in the dark."

Perhaps the strangest aspect is how the company seems to be struggling to anticipate its public perception. It seemingly had no idea that people would point out the severely lacking graphical fidelity of a product that's costing billions of dollars.

The product has already failed to take off and has been met with a less-than-lukewarm welcome by mainstream audiences.

In other words, the stakes are sky high as Zuckerberg pours more and more of the company's resources into headset hardware and software. According to documents obtained by Reuters back in May, Meta's Reality Labs division, which is in charge of the company's VR efforts, had to postpone projects, with managers warning employees of cutbacks.

7: Best DJI Drones in 2022

There are drones, and then there are DJI drones. DJI, also known as Da-Jiang Innovations, is known worldwide for its videography tools which include action cameras, gimbals, and of course, drones. These camera drones are some of the best on the market, can fly to obscene heights, and take gorgeous, high-definition photos and videos. Yes, they're also on the pricier side, but luckily, even the budget offerings are impressive. Here is a thorough roundup the best DJI drones available right now.

— Best Overall: DJI FPV Combo
— Best for Beginners: DJI Mini 2
— Best for Videography: DJI Mavic 3
— Best for the Money: DJI Mini 3 Pro
— Best Budget: DJI Mini SE
Experts Say Elon Musk Is Wrong About That Population Thing He Keeps Saying

HOW WE PICKED THE BEST DJI DRONES

When selecting the best DJI drones, rest assured that there are no bad options. The build quality is fairly high, even when buying one of the more affordable DJI drones. Still, aside from price points, there's quite a bit of difference between the family of drones DJI offers. Here are a few things we considered when picking out the best DJI drones.

Durability: Have you ever tried flying a cheaply made drone outside with even light winds? Expect all that flimsy plastic to give way to the forces of nature. Just about all DJI drones can stand up to high winds and heat, but naturally, some of the more premium offerings will be able to take a stronger beating.

Control: You'd think that in a post pro-gamepad world, companies wouldn't overcomplicate things. Just about anyone born after the Atari age knows how to use a standard gamepad, and the best drone controllers smack of these. If a DJI drone doesn't handle easily and steadily, is it even worth the investment?

Camera Quality: There's no point in buying a drone if you can't use it to actually take in the sights and sounds of the skies. But there's a big difference between good picture quality and great picture quality that the cameras inside these drones capture. One is great for sightseeing, while the other is ready for primetime.

Flight Time: How long can a DJI drone stay in the air? As powerful as they may be, the answer may surprise you. The versatility of a drone that can stay in flight

longer is definitely a selling point and may be worth the investment depending on your needs.

Why It Made The Cut: The FPV Combo doesn't let you just see what the drone camera sees, you can practically feel it with incredibly immersive goggles.

Specs:

— Dimensions: 10.04 inches L x 12.28 inches W x 5 inches H, with propellers
— Weight: 1.75 pounds
— Camera: 120 Mbps, 4K 60fps
— Max Speed: 86.9 mph
— Max. Surface Above Sea Level: 19,685.04 feet
— Average Flight Time: About 20 minutes

Pros:

— Seriously immersive flight experience
— Customizable LED arm lights
— Seamless flying

Cons:

— Cumbersome assembly

The DJI FPV Combo is a fantastic camera drone, but it's more than that. It's also a full-fledged flight experience.

DJI FPV syncs up to a pair of goggles that put you in the cockpit of this drone. You see what the drone sees as it soars through the skies. It's as immersive as any great VR game, only with a good bit more realism thanks to the powerful 4K camera inside FPV. The super wide-angle view may be a little too jarring for some but definitely provides an addicting experience. Aside from that, it's one of the easiest DJI drones to control, with seamless flying in any environment. You can customize the LED lights on the drone's arms. There are even multiple modes of control with its innovative controller. For a few dollars more, you can even sync it up to a fairly responsive motion controller. All this flight magic is possible, but only after a not-so-simple assembly. But once it's built, the experience is relatively seamless.

Why It Made the Cut: A surprisingly great camera, easy controls, and reasonable price make this a great starter drone.

Specs:

— Dimensions: 9.64 inches L x 11.38 inches W x 2.2 inches H, unfolded with propellers
— Weight: 0.55 pounds
— Camera: 12 MP Photo, 4K 30fps Video
— Max Speed: 22.36 mph
— Max Surface Above Sea Level: 13,123.36 feet
— Average Flight Time: About 31 minutes

Pros:

— Portable and foldable
— Above average battery life
— Great camera

Cons:

— Connectivity issues with control

The DJI Mini 2 is not much heavier than a Granny Smith apple, but its flight prowess is perfect for anyone new to the drone game.

Aside from being a featherweight drone, DJI Mini 2 also takes up close to no space and fits in both backpacks and some larger pockets. The camera is good, not great, but on par with the kind you'd find in more affordable smartphones. But it will get the job done when it comes to taking scenic photos and 4K videos. Unlike many drones made for beginners, this one actually sports an above-average battery life and can stay airborne for a little longer than 30 minutes on average. That is if weather conditions are ideal. Environments are sort of where the DJI Mini 2 soars or sinks. We recommend not flying around obstructions like trees or walls. This may cause the remote to disconnect from the drone and cause crashing, or worse, accidents that damage the drone. As long as you take it easy with this drone, the value is great for anyone starting out.

Why It Made The Cut: Mavic 3 isn't simply a powerful drone, it doubles as a full-fledged action camera ready for all manner of content creation.

Specs:

— Dimensions: 13.68 inches L x 11.14 inches W x 2.24 inches H, unfolded
— Weight: 1.97 pounds
— Camera: 4/3 CMOS Hasselblad Photo, 4K-5.1K 120fps Video
— Max Speed: 42.5 mph
— Max Surface Above Sea Level: 19,685.04
— Average Flight Time: About 46 minutes

Pros:

— Cinematic Hasselblad camera
— Enhanced safety features
— Smooth, precise flight controls

Cons:

— Obscenely expensive

The top of the line DJI drone, the Mavic 3 stands apart from the pack because of its incredibly flashy camera.

Developed by leading camera manufacturer Hasselblad, the 4/3 CMOS photo camera has 12.8 stops of dynamic range, vision-detection autofocus technology, and plenty more DSLR-like features. If you're looking to shoot flashy nature videos, you can record anywhere from 4 to 5.1K, depending on how many frames per second you're willing to dedicate to the action. It even supports Apple Pro Res, which makes it perfect for any video that's Final Cut-bound. Best of all, you can rest easy that all that precious and pricey camera tech is protected by some of the most enhanced safety features DJI offers. Omnidirectional obstacle sensing keeps this drone from crashing or even bumping into things that would otherwise destroy it. As far as controls go, they don't come smoother than DJI Mavic 3. It's a pro-video shooting, sky-soaring beast. But that price tag is also high enough to scrape the stratosphere. If you're looking for a premium drone option to end all premium drone options, the DJI Mavic 3 is easy to recommend.

Why It Made The Cut: A mid-priced offering that packs tons of features in an itty bitty space.

Specs:

— Dimensions: 9.88 inches L x 14.25 inches W x 2.75 inches H, unfolded with propellors
— Weight: 0.55 pounds
— Camera: 48 MP photo, 4K HDR Video 60fps
— Max Speed: 35.79 mph
— Max Surface Above Sea Level: 13,123.36 feet
— Average Flight Time: About 47 minutes

Pros:

— Small enough to fit in many pockets
— Impressive battery life
— Shoot photos day and night

Cons:

— Dubious range

If you have a few more dollars to through around, the mid-priced DJI Mini 3 Pro is a great, somewhat affordable splurge, at least as far as drones are concerned.

Like the other drones in the DJI Mini line, this device is incredibly portable, especially when it's folded up. Go on, slide it in your pocket, it should fit. Despite being small, it's no slouch when it comes to power and flight time. On a full charge, it can stay airborne for 47 minutes under ideal conditions. If it's a windy day, you may get diminishing returns when it comes to how long it will stay in the sky. Users also reported that the range Mini 3 Pro is less than accurate. Dubious flight ability aside, the drone is small enough that you may be able to fly it in places where larger drones are verboten. The camera is fairly stellar, with 4K video that shoots up to 60fps. It's got better than average obstacle sensors too, so you can fly about with peace of mind. You can also purchase optional upgrades for battery life and control if you outgrow its many flashy features.

Why It Made The Cut: DJI Mini SE is one of the most affordable drones in its class and a great place to start your new drone hobby.

Specs:

— Dimensions: 9.64 inches L x 11.37 inches W x 2.2 inches H, unfolded with propellors
— Weight: 0.54 pounds
— Camera: 12 MP photo, 2.7K Quad HD Video
— Max Speed: 29 mph
— Max Surface Above Sea Level: 9842.52 feet
— Average Flight Time: About 30 minutes
Pros:

— Ultralight, ultra-portable
— User-friendly controls
— Fast, impressive camera
Cons:

— Less than ideal signal strength

For those looking to go airborne but have limited spending cash, the DJI Mini SE isn't the best, but it is, as they say, "good enough."

It's lightweight and portable, the lightest and most portable in the DJI mini line, in fact. DJI Mini SE quite literally fits in the palm of your hand but can defy some serious gravity. Controlling it is fairly simple, thanks to the remote control that works hand-in-hand with the DJI app (available on Google Play and App Store),

so you can use it right out of the box. While it doesn't shoot in 4K, it does shoot a little higher than 1080p at 2.7K Quad HD Video. With good weather conditions, you can stay airborne for about half an hour. That said, like the Mini 2, the signal strength will waver around trees and other obstructions. But if you're looking for a great starter drone to play around with in your backyard or at the park, DJI Mini SE is a great offering.

THINGS TO CONSIDER BEFORE BUYING A DJI DRONE

Laws Concerning Flight: Just because the best DJI drones can soar through the skies with ease, doesn't mean that you're safe from the FAA. Plenty of drone promotional footage has these devices flying about grand nature backdrops. That doesn't mean that you should lug your DJI drone with you to a public park like Yosemite or Yellowstone thinking you'll be able to fly about without having Johnny Law breathe down your neck. Before packing up the drone, consult the rules and laws of whatever destination you're planning to fly about. For more information, consult the official FAA website.

8: Best Ethernet Cables For Gaming

Using an Ethernet cable for gaming is essential if you regularly play PC or console games online. Having the fastest-possible connection to the internet will lower the latency (lag) between what you're seeing on your screen and what's happening in real time. A very slow internet connection will allow fellow gamers to attack you (in player vs. player games) without you even realizing they're coming.

If you don't play online multiplayer games (yours truly falls into that category), connecting your game console to a cable modem or router will allow you to download digital copies of games more quickly when compared to WiFi. This benefit carries over to downloading DLC (downloadable content) packs and patches. We highly recommend using one of the best Ethernet cables for gaming based on our personal experience with testing PC and console games using a wireless and wired connection.

— Best Overall: Monoprice Flexboot Cat-6 Ethernet Patch Cable
— Best Braided: Amazon Basics BraidedCat-7 Gigabit Ethernet Cable
— Best Long: Cable Matters Snagless Long Cat-6 Ethernet Cable
— Best Flat: UGREEN Cat-7 Ethernet Cable

HOW WE PICKED THE BEST ETHERNET CABLES FOR GAMING

Our recommendations for the best ethernet cables for gaming are based on a mix of research and hands-on testing. Below are the factors we considered most highly when deciding which Ethernet cables to include in this buyer's guide.

Speed: The maximum speed of your Ethernet cable is actually less important than you might think because its performance will be limited by the download and upload speeds provided by your internet service provider's plan.

For example, a Category 6 Ethernet cable is capable of transferring data at speeds of up to 10 Gbps (Gigabits per second), which translates to 10,000 Mbps (Megabits per second). According to the 2021 issue of the FFC's Measuring Fixed Broadband Report, the average download speeds advertised by internet services providers who offer DSL, cable, and Fiber internet connections were 21 Mbps, 178 Mbps, and 447 Mbps respectively.

Additionally, most gaming PCs and all game consoles have a Gigabit Ethernet port, which means their data transfer speed is limited to 1 GBps. All of the Ethernet cables we're recommending in this guide are Category 6 cables or above, so using any of them will futureproof you for several years.

Category: An Ethernet cable's category refers to how many pairs of copper wire are twisted inside of it, how much shielding it has, and its bandwidth (measured in Megahertz; shortened to MHz).

Length: In general, Category 6 cables (and above) can maintain their top speeds at lengths of up to 100 feet. Larger cables will have lower maximum transfer speeds, but again, you wouldn't be able to take advantage of those top speeds for gaming anyway.

Shielding: Most Ethernet cables are covered in a thick rubberized material, but we've also recommended options with more durable sleeves for specialized cases.

BEST ETHERNET CABLES FOR GAMING: REVIEWS AND RECOMMENDATIONS

Best Overall: Monoprice Flexboot Cat-6 Ethernet Patch Cable

The Monoprice Flexboot Cat-6 Ethernet Patch Cable is the best ethernet cable for gaming overall.

Why It Made the Cut: Monoprice's Flexbook Cat-6 Ethernet Patch Cable will supply the level of performance necessary for online gaming.

Specs:

— Category: 6
— Length: .5 feet to 75 feet.

— Shielding: PVC

Pros:

— Reinforced connectors
— Ultra fast
— Available in multi-packs

Cons:

— Not all sizes are available

Monoprice has been one of our go-to cable companies for years because of its remarkable consistency; every cord we've tested, whether it's for charging or networking, has never failed. That's why we can easily recommend its Flexboot Cat6 Ethernet Patch Cable to gamers everywhere.

The basic-looking cable has a couple of niceties you wouldn't expect for a tech accessory that can cost as little as $1.59. It has thick connectors, which are less likely to break if you tug on them a little too hard (repeated strain will damage any cable), and a prominent tab that makes removing the cable from your console easier. If you tend to move your game system or PC around a lot, those little touches will make a bigger difference.

One of the biggest benefits to Monoprice's gear is the company's generous discount when buying tech accessories in bulk, and that's true here. A single 7-foot Ethernet cable will set you back $4.43, but a 12-pack costs $28.15. Unfortunately, this bulk discount isn't available for every size of Ethernet cable Monoprice offers. In fact, certain lengths of cable aren't available period, which is something to look out for.

If Monoprice has an Ethernet cable that's the appropriate length to connect your game console or PC to your cable modem, don't hesitate to pick one up.

Best Braided: Amazon Basics Braided Cat-7 Gigabit Ethernet Cable

Amazon Basics' Braided Cat. 7 Ethernet cable is one of the best ethernet cables for gaming and it's the most durable.

Why It Made The Cut: Amazon Basics' Braided Ethernet Cable has a tougher outer casing to prevent it from getting punctured.

Specs:
— Category: 7
— Length: 3 feet to 50 feet
— Shielding: Braided nylon

Pros:

— Extremely casing
— Reinforced connectors
— Ultra fast

Cons:

— Slightly harder to maneuver

If you share a home with pets that always chew through your cords, it's worth investing in Amazon Basics' Braided Cat-7 Gigabit Ethernet Cable. The cable is encased in a layer of tough nylon that's harder to cut (or chew) through than the PVC cover found on most Ethernet cables. That said, the connectors on this cable are a little smaller than the ones found on Monoprice's cables, and it doesn't look as though their tabs are as easy to pinch.

The tradeoff to using nylon-braided cables is that their durability comes at the cost of flexibility. You may find yourself having to put a little more effort into

snaking this Ethernet cable through a hole in your media center, but it's designed to handle the stress. We can also highly recommend using this cable if you're planning on running it on the inside of your wall to bring wired internet into another room in your house.

Snaking a cable through your wall almost always requires you to put additional stress on the cord as you try to avoid obstacles and snags. You'll want to choose an Ethernet cable that can handle a couple of extra scrapes without tearing if you plan on undertaking that job.

Best Long: Cable Matters Snagless Long Cat-6 Ethernet Cable

Cable Matters Snagless Ethernet cable is the best ethernet cable for gaming that's long.

Get the Stretch. Cable Matters

Why It Made The Cut: CableMatters' Ethernet Cable is sensibly priced at lengths up to 150 feet.

— Category: 6
— Length: 7 feet to 150 feet
— Shielding: PVC
Pros:

— Available in ultra-long variations

— Ultra fast

— Pair separator reduces losses in bandwidth

Cons:

— Thin cable shielding

CableMatters is another company whose cords have impressed us over the years, and this Ethernet cable was designed for long runs. This cable doesn't have the same nylon braiding as the Amazon Basics one we recommended earlier, but it's available at lengths up to 150 feet. You'll need that much cable if you plan on running an Ethernet line from one floor of your home to another, which is a project we're all too familiar with.

The PVC coating on CableMatters' Ethernet Cable should be flexible enough to get around obstructions in your walls, and its reinforced connectors won't get damaged on their way down. The large tabs on this cable's connectors also inspire confidence. Longer Ethernet cables can be less effective than shorter ones, but CableMatters has reduced the potential for bandwidth loss by segmenting the sets of twisted pairs inside this cable to reduce interference.

We don't expect your game console to take full advantage of the Cat6 speeds today, but the systems available in five to 10 years might be able to, and you don't want to have to replace this cable at that point. If you need a long Ethernet cable to accommodate your gaming setup, CableMatters has you covered.

Best Flat: UGREEN Cat-7 Ethernet Cable

The UGREEEN Cat-7 Ethernet Cable is the best ethernet cable for gaming that's flat.

Hide and Speed. UGREEN

Why It Made The Cut: UGREEN's Cat-7 Ethernet Cable is a subtle way to speed up your gaming experience.

— Category: 7

— Length: 3 feet to 50 feet

— Shielding: PVC

Pros:

— Slim

— Ultra fast

— Foiled twisted pair construction

Cons:

— May tear more easily

Cleanliness is one of the primary reasons many gamers prefer using WiFi instead of an Ethernet cable when connecting their console or PC to the internet. It's true, you'll need to string a cord from one place to another, but UGREEN's Ethernet

cable is so thin you probably won't notice it's there. It's so small that you can snake it behind furniture or under a rug without it protruding out awkwardly.

If your game system is in the same room as your cable modem, you can easily snake this cable along the molding, and most people won't notice it's there. This cord's thinness doesn't impact its performance, so you can't use that excuse either. Our only concern with this Ethernet cable is that a pet (or errant robot vacuum) is more likely to break through its PVC coating. We're confident in the shielding used on the inside of the cable, but a direct puncture might break its seal. We don't recommend using this Ethernet cable on the inside of your wall.

We feel the benefits of using an Ethernet over WiFi when gaming are worth the clutter that comes with an extra cable or two, but UGREEN greatly reduces the biggest downside of a wired connection.

THINGS TO CONSIDER BEFORE BUYING ETHERNET CABLES FOR GAMING

Is Ethernet really faster than WiFi?

This is a common question, and while the short answer is a definitive "yes!" it's worth understanding why. Data between your computer and a server on the internet is carried in packets. When your gaming PC or console is connected to the internet with an Ethernet cable, the largest number of packets can pass between your computer and the internet with the fewest interruptions.

When your system is connected to the internet over WiFi, factors such as the distance between your rig and the WiFi access point (aka router), and the materials your walls are made out of come into play. Any physical barriers between your gaming system and WiFi router will reduce the number of packets that can be transmitted between the two. These concerns are especially relevant if you live in an older home, which wasn't designed with wireless data transmission in mind.

The WiFi connection between your PC or game console can also be disrupted by wireless interference from other devices — anything from a wireless landline phone to smart-home accessories can have an impact on the quality of your gaming experience. The advantages of choosing a wired internet connection instead of a wireless one applies to using the net for any reason, but the difference is most obvious when you're performing a high-bandwidth task, whether that's streaming a 4K video or downloading a large game.

Number of Consoles: If you have a lot of game systems, and want to connect all of them to the internet with an Ethernet cable, your cable modem may not have

enough Ethernet ports to keep them connected simultaneously. If that's the case, you're going to need an Ethernet Switch, which acts as a splitter.

You can connect all of your game consoles to the Ethernet Switch, connect the Ethernet Switch to your cable modem, and all of the systems will establish a wired connection to the internet with no loss of Bandwidth. We recommend this 8-Port Gigabit Ethernet Switch from Netgear because of our previous experience with the company's networking hardware, which has always been excellent.

9: Best Curved Monitors in 2022

Curved monitors don't simply look great, they feel great. A curved screen takes advantage of the natural depth of your eyesight, for a sensation that truly has to be seen to be believed. Of course, with these immersion capabilities, these devices typically run a little pricier than the average flat monitor. It can be daunting picking one out, so we've compiled a list of the best for both professional and casual use. Here are the best curved monitors available right now.

— Best Overall: BenQ MOBIUZ EX3410R Ultrawide Curved Gaming Monitor
— Best for Home Office: Monoprice Dark Matter Curved Gaming Monitor
— Best for Gaming: Alienware 34 Curved QD-OLED Gaming Monitor
— Best QLED: Samsung Odyssey G9 49-Inch G9 Gaming Monitor
— Best Budget: Sceptre Curved 30-Inch Gaming Monitor
Japanese Government Says Employees Will Stop Saving Official Data on Floppy Disks

HOW WE PICKED THE BEST CURVED MONITORS

Because of their immersion capabilities, curved monitors are perfect for gaming and cinematic media watching, but are equally well-suited to anyone who likes wide, open workspaces. Aside from being curvier than the average flat screen, additional features separate good curved monitors from the best curved monitors. Here are a few things to look for in a great device.

Screen Size: Bigger is not always better, but larger screens do offer a bit more in the realm of possibility. A fair amount of real estate to work with allows you to tap into immersive PC and console gaming, as well as more freedom when it comes to juggling different apps at once. Of course, bigger screens come with a bigger price tag, so you have to prioritize what's important to you.

Refresh Rate: A massive screen is useless if the refresh rates are less than ideal for gaming that requires speed, as with many hardcore titles like "Fortnite" and "Cyberpunk 2077." Of course, like screen size, the importance of the refresh rate is another aspect that is wholly dependent on what kind of games you usually play, if you play games on your PC at all. Speed is what usually separates gaming curved monitors from regular curved monitors, and even some gaming models.

Versatility: A computer monitor, even a curved one, should have at least a few inputs to plug in a PC or laptop, a gaming console, a streaming device, or anything else that can plug in via HDMI. All a monitor should have to do is provide a display for a given device, but extra features are always welcome. They include built-in speakers, which many curved monitors leave out.

Ease of Use: All this talk of curvatures and refresh rates can complicate what is ultimately an easy device. If you can use a TV, you can use one of the best curved monitors. Devices shouldn't require you to come to the party with any sort of complicated knowledge. More importantly, customizing settings on the screen and switching between inputs should be equally simple.

BEST CURVED MONITORS: REVIEWS AND RECOMMENDATIONS

Best Overall: BenQ MOBIUZ EX3410R Ultrawide Curved Gaming Monitor

Why It Made the Cut: An easy-to-use curved screen with some of the best in image optimization.

Specs:

— Dimensions: 15 inches H x 31.3 inches W x 5.9 inches H
— Weight: 21.7 pounds, with stand
— Screen Size: 34 inches, 1000R
— Max Resolution: 3440 x 1440, 21:9
— Max Refresh Rate: 144 Hz
— Connectivity: Two HDMI 2.0 ports, one DisplayPort v1.4, one USB Type B Upstream, two USB 3.0 Downstream
Pros:

— Easy on the eyes
— Solid built-in speakers
— Handy control for quick customization
Cons:

— Does not support VESA mounts

BenQ MOBIUZ EX3410R curved monitor is full of surprises, and a great value for the price.No, it's not an OLED or Quantum Dot OLED screen, but it could easily pass for one because of its intense color, deep blacks and whites, and fantastic picture quality. MOBIUZ is built for speed, topping out at 144 Hz, which is more than enough for most hardcore gaming on PC. Even if you prefer gaming on consoles, this curved monitor sports compatibility with PS5, Xbox Series, and even Nintendo Switch consoles.

Unlike other screens in this class, its built-in Trevolo speakers aren't just good, they're just short of great, with 5-watt subwoofers and five dedicated audio modes. Brilliant picture quality aside, this screen is made to go easy on your delicate retinas, and continuously adapts the screen to minimize eye strain, headaches, and fatigue. Best of all, you can easily customize settings using a short and handy remote control. Sadly, it doesn't come with VESA-mount capabilities, but the value can't be understated.

Best for Home Office: Monoprice Dark Matter Curved Gaming Monitor

Monoprice Dark Matter is the best curved monitor for home office use for its wide-open screen space.

Why It Made the Cut: A simple, stripped-down but speedy screen, with tons of space for work and play.

Specs:

— Dimensions: 18.5 inches H x 42.2 inches W x 9.7 inches D
— Weight: 32.6 pounds, with stand
— Screen Size: 48 inches, 1800R
— Max Resolution: 5120 x 1440, 32:9
— Max Refresh Rate: 120 Hz
— Connectivity: Two HDMI 2.0 ports, two DisplayPort v1.4, one USB type B

Pros:

— Rich picture quality on a massive screen
— Seamless customization
— Extra curvy for extra immersion

Cons:

— Monitor doesn't swivel

Monoprice prides itself on selling generic branded stuff at affordable prices, sort of like the electronic equivalent of the Kirkland brand. Like Kirkland, it's also lauded for its humble excellence, and the Monoprice Dark Matter curved gaming monitor is a prime example of this.

Despite the muted aesthetics and branding, this isn't exactly a frills-free curved monitor. Its curvature provides immersion, reduces eye strain, and its refresh rate is fast enough for most gaming needs. (Be sure to measure your desk before dropping the cash on this one, as its 48-inch screen stretches wide across most desks.) The picture quality is as rich as you'd want a screen at this price point to be, and its Quantum LCD technology enhances visuals with richer, deeper, and more lifelike colors. It's got a massive max resolution, topping out at 5120 x 1440, which means you've got plenty of room to juggle any and all work-from-home tasks, whether you're compiling Excel spreadsheets or editing videos in Adobe Premiere. The only clear downside with this screen is that it doesn't swivel, but it is compatible with VESA mounts which may remedy this flaw.

Best for Gaming: Alienware 34 Curved QD-OLED Gaming Monitor

Alienware 34 Curved QD-OLED Gaming monitor is the best curved monitor for gaming for its bright screen and fast refresh rates.

Why It Made the Cut: A gorgeous and speedy screen, with tons of space for work and play.

Specs:

— Dimensions: 16.4 inches H x 32.1 inches W x 12 inches D, with stand
— Weight: 35.05 pounds, with stand
— Screen Size: 34 inches, 1800R
— Max Resolution: 3440 x 1440, 21:9
— Max Refresh Rate: 175 Hz
— Connectivity: Two HDMI 2.0 ports, one DisplayPort v1.4, four USB 3.2 Downstream, one USB 3.2 Upstream

Pros:

— Big, bright, and immersive
— Super fast refresh rates
— Gorgeous build

Cons:

— Cumbersome controls

Gaming on computers requires one thing above all: speed. The Alienware 34 Curved QD-OLED gaming monitor is fast enough to stay ahead of the competition.

While many monitors offer muted design, Alienware 34 Curved QD-OLED is as sleek as they come. White accents combine beautifully with customizable RGB lighting, just like other Alienware products, from mice to tower PCs. There are tons of inputs here; enough to accommodate three devices, which may be enough for most gamers. Stutter-free speed is possible thanks to its NVIDIA G-Sync Ultimate certification, with a native 175-Hz refresh rate. The picture quality is intense, and actually a little jarring at first. After getting used to it, you'll delight in the immersive quality of the picture while you're gaming, watching Netflix, or just getting work done. Sadly, all the customization options may cause headaches, considering that the monitor doesn't have a dedicated remote, just a small, cumbersome nub button on the bottom of the screen. However, the monitor does maintain itself to increase its lifespan and prevent burn-in. You'll also need to bring your own audio system because this monitor doesn't come with speakers.

Best QLED: Samsung Odyssey G9 49-Inch G9 Gaming Monitor

Samsung Odyssey G9 49-inch is the best curved monitor that's QLED and lightning fast to boot.

Why It Made the Cut: A massive, lightning-fast monitor that's great for gaming, and everything else.

Specs:

— Dimensions: 21.15 inches H x 45.18 inches W x 16.39 inches D, with stand
— Weight: 36.8 pounds, with stand
— Screen Size: 49 inches, 1000R
— Max Resolution: 5120 x 1440, 32:9
— Max Refresh Rate: 240 Hz
— Connectivity: One HDMI 2.0 port, two DisplayPort v1.4, three USB 3 Downstream, two USB 3 Upstream

Pros:

— Cutting edge QLED
— Lightning fast refresh rate
— Support for popular graphics cards

Cons:

— No built-in speakers

The Samsung Odyssey line of curved monitors is one of the most coveted, and the G9 is no exception. It's perfect for gaming, content creation, and just about everything else one does with a computer monitor.

Like its televisions, Samsung Odyssey G9 offers the best and the brightest image quality with the latest in cutting-edge QLED tech. This thing is massive — essentially two 27-inch monitors stuck together. Granted, the build is far more seamless than that, whether you're tapping out at its full 32:9 resolution, or partitioning it into two 16:9 screens. Juggling between games and applications works flawlessly here, with a refresh rate that is more than you'll ever need. With the curvature thrown into the mix, expect depth that's unparalleled, especially when you're using it off the clock. For work and play, it's a monitor that could easily last you years, and considering its price, it may have to. It also doesn't have any speakers, so you'll need to either use the ones on your laptop or PC, or simply provide your own computer speakers.

Best Budget: Sceptre Curved 30-Inch Gaming Monitor

Sceptre Curved 30-inch Gaming Monitor is a great budget offering.

Why It Made the Cut: A fairly good starter screen, for those looking to dip their toes into the curved monitor space.

Specs:

— Dimensions: 16.45 inches H x 27.8 inches W x 9.2 inches D, with stand
— Weight: 10.7 pounds, with stand
— Screen Size: 30 inches, 1800R
— Max Resolution: 2560 x 1080, 21:9
— Max Refresh Rate: 100 Hz
— Connectivity: Two HDMI 2.0 ports, one DisplayPort v1.4

Pros:

— Wide range of colors
— Built-in speakers are fair
— Unbeatable deal

Cons:

— Slow refresh rate

If you simply must have a curved monitor but aren't ready to spend a good portion of your paycheck, the Sceptre Curved 30-inch is an inexpensive offering that's not great, but it's not terrible for the price.

For the cost, it's a fairly big screen, curved or otherwise. It's not a 4K gaming monitor, but it is FHD 1080p, which is at the very least in the high-definition realm, and will provide some good picture quality for a budget gaming monitor. The wide color gamut it offers is enough for gaming, especially if you're the kind of gamer who likes enjoying games from previous generations that are available at massive discounts. Unlike some screens, there are even some built-in speakers to amplify the sound in music, games, and movies without a secondary device. The measly 85- Hz native refresh rate may leave some hardcore gamers cold, even if you overclock at 100 Hz. There are three inputs to play with, two HDMI and one DisplayPort, so you can connect at least three devices. That said, there are few other frills here — it's not even VESA-mount compatible. However, it's incredibly affordable and may be enough for light use.

THINGS TO CONSIDER BEFORE BUYING A CURVED MONITOR

Curved vs. Flat Monitors: There's no sugarcoating it: on the whole, curved monitors cost a fair bit more than their flat counterparts. So it begs the question, which monitor style is right for you? In the end, it truly depends on what you prefer. Some folks find the immersive experience that curved monitors provide less than ideal. Curved monitors, especially those on the larger end, do sort of pull you in, and initially, your eyes may experience some light strain as they accommodate the new viewing angle. On the whole, curved monitors will be easier on the eyes in more ways than one, because they work with the natural curvature of your eyes. Many of the best curved monitors like BenQ MOBIUZ EX3410R Ultrawide Curved Gaming Monitor also have technology that filters out harmful light, which is a godsend for those that sit in front of screens for extended periods of time.

For many, the immersion can't be beaten, regardless of if you're gaming or simply watching a widescreen cut of your favorite film. Whether you want to make the investment in a curved monitor depends on if you actually want that experience from your main screen.

To Mount (Or Not to Mount): High-end monitors, like high-end televisions, offer much in the way of possibility when it comes to how you set them up in any given work or game station. Most of the curved monitors in this roundup come with VESA-mount compatibility, so you can mount them to walls or on the back of your desk, to free up space. Granted, every curved monitor we picked has a sturdy

stand that works great out of the box. If you do decide to mount your monitor, we recommend the AVLT Single Monitor Arm Desk Mount which clamps to the back of any desk and supports monitors up to 43 inches wide. Larger monitors will require a little more heft, like the Ergotron HX Ultrawide Monitor Mount, which works with screens up to 49 inches wide.

10: Best Marine Solar Panels of 2022

Recharge batteries and power up marine electronics by using the sun's energy.

Marine solar panels can generate renewable energy to power a boat's electronic needs as well as personal gadgets while underway, anchored, or docked. These solar panels use photovoltaic (PV) technology to charge a boat's batteries, reducing the need to rely on a fossil fuel-powered generator or a dock line to provide electricity. By replenishing the boat's batteries, they can supply the energy needed to run essentials like bilge pumps, depth and fish finders, radios, GPS devices, lighting, fans, galley appliances, or other boating operations.

By harvesting the sun's rays throughout the day — almost every day — marine solar panels can help to minimize the amount of fuel you'll need to carry onboard to keep electronics fully operational. The best marine solar panels available today are designed to withstand maritime weather conditions so they can continue to power a boat's electronics for many years to come.

— Best Overall: Renogy 100W Monocrystalline Solar Panel
— Best Runner-Up:HQST 100 Watt 12V Monocrystalline Solar Panel
— Best Flexible: SunPower ExpertPower Flexible 100 Watt Panel
— Best Polycrystalline: Newpowa 100 Watt Polycrystalline Solar Panel
— Best Kit: Renogy 100W Monocrystalline Solar Panel Kit
— Best Portable: DOKIO Foldable Solar Panel 100W Solar Suitcase
— Best for Large Boats: Renogy Starter Kit (4 Panels)
— Best Small: ECO-WORTHY 25 Watts Off Grid Solar Kit
— Best Large Rigid: Newpowa 210W Monocrystalline 12V Module

HOW WE PICKED THE BEST MARINE SOLAR PANELS

In creating this guide, in order to provide a diversity of choices, we looked at many types, styles, and sizes of solar panels. This list of the best solar marine panels includes some of the top options for each type of panel such as portable, flexible, or rigid, and includes several sizes that satisfy multiple boating needs.

In many cases, the manufacturers offer similar panels in multiple wattage options. For instance, if a solar panel was offered in 50-, 100-, and 170-watt sizes, unless each specific wattage type was unrivaled in its category, we wouldn't award all of them to the same solar panel.

While we focused on marine solar panels and systems, we also realize that these modules and systems are designed for other mobile platforms as well (such as RVs). As such, some of these products are marketed or cross-promoted that way.

In all, we evaluated more than 75 professional reviews of more than 60 different modules and solar-energy systems, and also considered thousands of customer reviews across nearly 20 sites and resources. In that research, we found 20 top brands manufacturing solar panels intended for the marine environment. We used tools to help ensure that the customer reviews were generated by actual customers, and selected those ranked highly both by consumers and professional reviews.

While solar panels are an environmentally friendly means of generating electricity (much more so than diesel or gas generators), only two companies currently have some panels in their inventory that are Cradle-to-Cradle certified. That means that towards the end of the product's life, the consumer will have to decide how to dispose of the solar panel. It's one downside to this sunny solution (although most solar panels have a relatively long lifespan). We also checked to see if any of the specific solar products we included in this list carried any Cradle-to-Cradle certifications, but unfortunately, they did not.

The ability for a product to be repaired is crucial to its overall longevity, so warranties and customer service were another important consideration. We chose panels from North American companies where we could, with the knowledge that many of the solar panels and their components are still manufactured overseas.

BEST MARINE SOLAR PANELS: REVIEWS AND RECOMMENDATIONS

Best Overall: Renogy 100-Watt Monocrystalline Solar Panel

The Renogy 100w Monocrystalline Panel is the best marine solar panel overall.

Monocrystalline for Monohulls. Renogy

Why it Made the Cut: The Renogy 100-Watt Monocrystalline Solar Panel is one of the best options out there for most boaters' needs. It's powerful and compact, making it ideal for almost any size boat.

Specs:

— Dimensions: 42 inches L x 21 inches W x 1.4 inches H
— Weight: 14.1 pounds
— Claimed Efficiency: 22.3 percent
— Cell type: Monocrystalline
— Connectors: MC4

Pros:

— Compact size
— High efficiency
— Easy mounting options

Cons:

— Solar panel only; no mounting hardware included
— Customer service slow to respond
— No product end-of-life recycling programs

If you're just looking for an individual solar panel for your boat and already have the other equipment needed to tie it into your energy system (like solar controllers and hardware), the Renogy 100-Watt Monocrystalline Solar Panel is our overall favorite. It's compact and can absorb up to 500 watt hours per day. Plus, the company rates the panel's cell efficiency at an impressive 22 percent.

The Renogy panel's solar cells have bypass diodes that ensure each cell can send as much power as possible to the battery and charge controller. The solar panel is marine ready with an IP65-rated waterproof junction box and IP67-rated waterproof solar connectors. Pre-drilled holes allow for easy installation and are compatible with Renogy's mounting hardware (sold separately).

The panel is manufactured in Thailand and includes a five-year limited workmanship warranty and a 25-year output warranty (at 80 percent). Renogy offers a number of social initiatives, such as donating power stations to those affected by natural disasters, and the company also participates in educational partnerships to develop solar and sustainability projects.

Best Runner-Up: HQST 100-Watt 12V Monocrystalline Solar Panel

The HQST 100-Watt Monocrystalline Panel is the best marine solar panel runner-up.

Why it Made the Cut: The HQST 100-Watt 12V Monocrystalline Solar Panel is a great option if Renogy's 100-watt monocrystalline panel is out of stock. The HQST panel boasts similar specs, connections, and favorable reviews.

Specs:

— Dimensions: 40 inches L x 20 inches W x 1.2 inches H
— Weight: 12.8 pounds
— Efficiency: 22.3 percent
— Cell type: Monocrystalline
— Connectors: MC4

Pros:

— Compact size
— High efficiency
— Good mounting options

Cons:

— Solar panel only, no mounting hardware included
— Fewer mounting options than the Renogy
— Weaker frame

The HQST 100-Watt 12V Monocrystalline Solar Panel looks and performs nearly identically to the Renogy 100-Watt Monocrystalline Solar Panel, only at a slightly lower price tag. In fact, some suspect that this panel may simply be a rebranded version of the Renogy panel (which can happen occasionally with imported modules).

However, while the HQST is rated as highly as the Renogy solar panel, it has fewer overall ratings and customer reviews. Its panels carry a 25-year power output warranty, guaranteeing that they will produce 80 percent of their rated efficiency after 25 years of service. The panels are manufactured in China and can be purchased individually or in a pack of two or four.

Like the Renogy, the HQST features cell bypasses that allow each cell to perform to its maximum ability — even if parts of the panel are shaded. It also features an IP65-rated junction box, which means it's fairly water-resistant and can withstand at least 15 minutes of spraying water — important protection to have against small waves or sea spray when the boat is underway.

Best Flexible: SunPower ExpertPower Flexible 100-Watt Panel

The Sunpower 100-Watt Expert Power Panel is the best flexible marine solar panel.

Thin but Strong. SunPower

Why it Made the Cut: The SunPower 100-Watt Monocrystalline Flexible Panel is ideal for smaller boats and curved surfaces.

Specs:

— Dimensions: 46 inches L x 22 inches W x 0.8 inches H
— Weight: 4 pounds
— Claimed Efficiency: Cells between 22 and 25 percent
— Cell type: Monocrystalline
— Connectors: MC4

Pros:

— Lightweight
— Highly waterproof connectors and junction box (IP67)
— Thin and Flexible
— Cradle-to-Cradle certified company

Cons:

— Less durable
— Expensive
— Shorter life expectancy than rigid panels

SunPower makes some of the most efficient commercial solar panels available, and the company's collection of flexible solar panels are equally as impressive. In fact, several other manufacturers use Sunpower's PV cells for their own panels (even if the products don't carry the Sunpower brand). It's also one of two major solar companies that have achieved Cradle-to-Cradle certification, meaning it has a plan in place to recycle modules at end-of-life.

These semi-flexible panels are ideal for curved boat surfaces, or for places where a solar panel is attached to something that's more flexible, like a bimini or cover. The plastic covering on these panels makes them highly resistant to impact and weight (in case you accidentally step on them when walking around a swaying boat).

Flexible solar panels generally have thinner layers of PV materials than rigid solar panels, and most are less efficient than monocrystalline (and even polycrystalline) rigid panels. Yet, SunPower still claims their Maxeon solar cells can deliver up to 25 percent efficiency in a flexible panel. We selected the 100-watt panel since it's the most used in boating applications, but SunPower also offers them in larger and smaller sizes.

All of SunPower's flexible panels use the same type of MC4 connectors (cable adapters) and have a junction box that's IP67 rated, making them more waterproof than competitors.

Best Polycrystalline: Newpowa 100-Watt Polycrystalline Solar Panel

The Newpowa 100 Watt Panel is the best polycrystalline.

Why it Made the Cut: If you prefer a polycrystalline solar panel (which is a little cheaper, but larger), the Newpowa 100-Watt Polycrystalline Solar Panel is an ideal choice.

Specs:

— Dimensions: 36 inches L x 27 inches W x 1 inch H
— Weight: 15.4 pounds
— Claimed Efficiency: 22.9 percent
— Cell type: Polycrystalline
— Connectors: MC4

Pros:

— Less expensive
— Can withstand high winds
— 25-year output warranty (at 80 percent)

Cons:

— Larger than monocrystalline solar panels
— No mounting hardware included

The Newpowa 100-Watt Polycrystalline Solar Panel is slightly squarer and larger than the monocrystalline panels of the same wattage, but costs a little less than its monocrystalline counterparts. The squarer nature of the panel can also be useful in certain applications or surface areas of a boat. The solar panel features diode bypasses to help each cell produce as much power as possible in partial shade (by avoiding the shaded cells), and has IP67 connectors and an IP65-rated junction box.

While some people worry about polycrystalline solar panels being slightly less efficient than monocrystalline, that just means it needs a little more space to produce the same amount of power. As such, polycrystalline solar panels should be considered for larger boats or boats with additional flat surface areas.

The panel includes a two-year, limited material and workmanship warranty as well as a 10-year output warranty (for 90 percent) and a 25-year output warranty (for 80 percent).

Best Kit: Renogy 100-Watt Monocrystalline Solar Panel Kit

Renogy's 100-Watt Monocrystalline Starter Kit is the best solar marine panel kit.

Why it Made the Cut: If you need all the hardware and extra equipment to connect a solar panel to a boat's battery, the Renogy 100-Watt Monocrystalline Solar Panel Kit is a perfect choice.

Specs:

— Dimensions: 42 inches L x 21 inches W x 1.4 inches H
— Weight: 16.5 pounds
— Claimed Efficiency: 22.3 percent
— Cell type: Monocrystalline
— Connectors: Solar Panel: MC4, Battery: Eyelets

Pros:

— Full solar panel kit with controller and mounting hardware
— Great value
— Compact size
— High efficiency
— Multiple amperage controller options available

Cons:

— Mounting hardware limits options
— Includes PWM controller (not as efficient as an MPPT)

A solar panel alone is a great purchase, but if you need all the hardware and equipment for properly connecting a solar panel to your battery, check out the Renogy 100-Watt Monocrystalline Solar Panel Starter Kit. The kit features the same Renogy solar panel as our overall top pick, but bundles in everything else you'll need to get rolling. The Z-bracket mounting hardware included with the kit allows you to install the panels flush to the surface of your boat.

To help regulate the flow of energy to prevent overcharging your batteries, with this package you can opt for a 10-amp, pulse width modulation controller (PWM), keeping the cost of the system under $200. Or, upgrade the kit to include a more advanced or higher amp controller, such a a maximum power point tracker (MPPT solar controller), which operates up to 30 percent more efficiently than a standard PWM device. This means the higher amp controllers can charge batteries faster and connect multiple panels into a system (but they cost more). These controllers can also connect to multiple battery types and voltages as well.

Best Portable: DOKIO Foldable Solar Panel 100-Watt Solar Suitcase

The Dokio Foldable Solar Suitcase is the best portable marine solar panel.

Why it Made the Cut: The 100-Watt DOKIO Solar Suitcase is ideal for boaters who want to bring solar power with them when they're going out on the boat. It's

a lightweight folio with an integrated charge controller, so it can be used during various types of outdoor adventures.

Specs:

— Dimensions: Folded: 24 inches L x 21 inches W x 2.8 inches H
— Weight: 18.5 pounds
— Claimed Efficiency: N/A
— Cell Type: Monocrystalline
— Connectors: Battery: Alligator clips

Pros:

— Portable and lightweight monocrystalline panels
— Durable anodized aluminum frame
— All-in-one kit

Cons:

— Stand could be more adjustable and robust
— Can't connect with multiple units
— Somewhat expensive

The DOKIO Foldable Solar Panel 100-Watt Solar Suitcase is ideal for users who need a powerful, yet portable solar power solution. The all-in-one unit includes a charge controller and USB ports for directly charging smaller devices. It also includes alligator clips for attaching to 18-volt batteries.

Established in 2007, Dokio is an ISO 9001-certified company that manufactures its portable solar suitcases in China. What's great about this kit is that it isn't just for a boat; you can use it for car camping, glamping, and RV-ing as well. As such, it's a pretty utilitarian solution, ideal for users with lots of adventure equipment.

Unfortunately, the stand isn't robust enough to use in bad weather conditions on a boat. However, since it is foldable and only about 20 pounds, you can quickly break it down and stow it in adverse conditions. It's also easy to transport ashore to power devices like a laptop or USB speaker during afternoon sailing breaks.

Best for Large Boats: Renogy 400-Watt Starter Kit (4 Panels)

The Renogy 400-Watt starter kit is the best marine solar panel kit for large boats

Why It Made the Cut: This all-in-one, the multi-panel kit can power up more advanced electronics without having to purchase panels à la carte.

Specs:

— Dimensions: Four panels: 42 inches L x 21 inches W x 1.4 inches
— Weight: 72.8 pounds
— Claimed Efficiency: 22.3 percent
— Cell type: Monocrystalline
— Connectors: Solar Panel: MC4, Battery: Eyelets

Pros:

— Full solar panel kit with controller and mounting hardware
— High efficiency
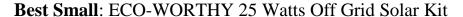— Multiple amperage controller options available

Cons:

— Mounting hardware limits options
— Expensive

This Renogy 400-Watt Solar Starter Kit system is ideal for a larger boat or yacht, or the liveaboard boater who plans to use the sun to power not just minimal electronics, but also equipment like a microwave, small fridge, and a laptop. It features four of Renogy's 100-watt solar panels, plus all the equipment to mount it and hardware to connect to a boat's batteries.

With four rigid panels, this kit needs more mounting space than a single-panel system, so it's not ideal for smaller boats. However, if you have a larger boat with plenty of deck space, it can eliminate the need to charge batteries with a boat's motor, paying back the initial cost of the system quickly with the free energy from the sun.

The 400-watt solar kit from Renogy features Z-bracket mounting hardware (for flush mounting to a flat surface) and enough cordage and adapters to connect everything. Renogy also offers this package with multiple charge controller options (at varying prices).

Best Small: ECO-WORTHY 25 Watts Off Grid Solar Kit

The ECO-WORTHY 25-watt solar kit is the best small marine solar kit.

Why it Made the Cut: This full, small solar kit can help keep a 12-volt boat battery topped off so that its electric components are ready to use.

Specs:

— Dimensions: 17 inches L x 13 inches W x .5 inches H
— Weight: 4.2 pounds
— Claimed Efficiency: 18 percent to 20 percent
— Cell type: Monocrystalline
— Connectors: Solar Panel: SAE;Battery: Alligator clips

Pros:

— Compact
— Trickle charging
— Inexpensive
— High efficiency
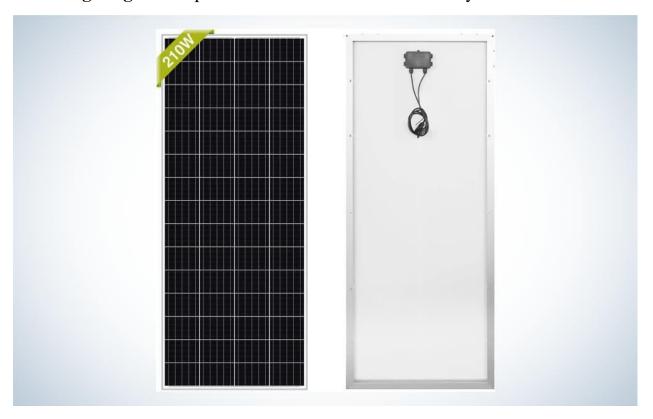— USB connection in controller

Cons:

— Low power
— Alligator clips are not a permanent battery connection
— Included PWM Controller (instead of MPPT)

If your sailboat has minimal power demands or you just want to keep your boats' batteries charged while at the dock, the Eco-Worthy 25-Watt Off-Grid Solar Panel Kit for 12-volt batteries should meet your needs. The solar panel's junction box is rated IP65 for waterproofness (protection against water jets), and the kit is easy to set up. If you're using the kit to trickle charge a battery, it should be installed facing toward the sun and ideally at an angle to collect the most power throughout the day. In most of North America, that's facing south and at an angle between 25 degrees and 35 degrees.

It's an inexpensive kit and the charge controller features a USB port for charging small devices as well. The 10-amp, PWM charge controller can also connect with gel or lithium battery technologies, and includes a built-in USB port. The charge controller will keep the panel from overcharging the battery during the day and also prevent it from draining the battery at night — when solar panel cells can operate in reverse.

Best Large Rigid: Newpowa 210-Watt Solar Panel Monocrystalline

The Newpowa 210 Watt Solar Panel is the best large rigid solar marine panel

Why it Made the Cut: If you're looking for a larger solar panel for your boat, the 210-watt monocrystalline panel from Newpowa is a solid option. It's still compact for its size, but is more powerful than 100-watt panels.

Specs:

— Dimensions: 65 inches L x 27 inches W x 1 inch H
— Weight: 24.4 pounds
— Claimed Efficiency: 22.9 percent
— Cell type: Monocrystalline
— Connectors: MC4

Pros:

— More powerful than other options
— Highly efficient

Cons:

— Larger than other options
— More expensive
— No mounting hardware

If you have more power needs than a 100-watt solar panel can provide, but still need a compact unit, Newpowa's 210 Watt Monocrystalline Panel is a great option because it's able to provide twice the charging power in a single panel.

Since it's larger, this panel is a good fit for boats with flatter surface areas or on racks built for holding solar panels.

Like the others on this list, the Newpowa 210-Watt panel has MC4 connectors that are IP67 rated. Its junction box is rated IP65, making it ideal for marine applications. Its bypass diodes help ensure it can produce as much power as possible, even under partial shade.

The panel comes with a two-year limited material and workmanship warranty, and is guaranteed 10 years at 90 percent output and 25 years at 80 percent.

THINGS TO CONSIDER BEFORE BUYING A MARINE SOLAR PANEL

When looking for solar panels for powerboats and sailboats there are many things to consider, such as the panel types, efficiency, wattage, size, and connection method.

Solar Panel Power

First and foremost, you want a solar panel or solar panels that are more than big enough to charge all the batteries and power up your appliances. In most cases, having roughly 20 percent more rated wattage in the solar panels than your estimated electric needs should provide enough on-demand power.

When reviewing available products, we found that most solar panels for boats are around 100 watts. These panels are generally close to three feet long and nearly two feet wide, making them small enough to fit on many parts of a boat. Larger and smaller panels were considered for their unique applications as well.

For a smaller boat or sailboat with minimal electric requirements, you may only need a solar panel that can provide 10 watts of charging power. Some of these panels are as small as a piece of paper.

For a large boat (or a liveaboard) with a lot of power needs, you may want multiple solar panels that are 100 watts or even 400 watts. For instance, if you're powering a microwave, TV, laptop, and sophisticated electronics, higher wattage panels would be needed. These panels are typically much larger than a basic, 10- or 20-watt panel.

That being said, panels with more efficient solar cells pack more productivity into a smaller space. So, a 100-watt solar panel with less efficient solar cells could actually be the same physical size as a 200-watt panel with the most efficient solar cells.

Rigid or Flexible

Another key concern is whether you want a rigid solar panel or a flexible solar panel. Rigid panels are generally more efficient and well-suited for mounting on larger boats with flatter surfaces. They're covered with impact-resistant glass in a metal frame, and often require hardware to install. Over time, a rigid panel's hardware or frame can corrode in maritime conditions, so it's important to choose a panel with added weather protection.

Flexible solar panels are encased in plastics that make them easier to attach to a variety or surfaces, whether rounded or flat. You can more easily attach flexible solar panels to biminis or even sails, for instance. However, attaching them to flexing surfaces will cause more physical strain on the panel and its solar cells, which can damage them in the long run.

Flexible solar panels have efficiency levels as low as 12 percent and generally are under 20 percent efficient. Hence they need more physical space than the other types of panels to produce similar amounts of power. Rigid solar panels are generally between 18 percent and 23 percent efficient since their photovoltaic cells are thicker and can absorb more light.

The hardware used to mount flexible solar panels can be more minimalistic than for rigid solar panels. In some places, they can simply be glued to the hull of the boat. While flexible panels are encased in plastics to make them more impact-resistant, the plastic material can degrade due to salt and other weather conditions.

Finally, a note on both types: warranties for rigid solar panels are often for far longer time periods. Many rigid solar panels have a materials warranty for 10 or more years. Flexible solar panels carry a vastly shorter materials warranty, generally from two to five years — even from well-renowned companies like SunPower.

Photovoltaic Technologies

The majority of solar panels for boats use silicon-based photovoltaic solar cells, which are among the most top-rated, commercially available cells. Within these types, monocrystalline cells are considered to be the most efficient and are made from a single, pure ingot of silicon.

Polycrystalline silicon cells are made from multiple silicon crystals bonded together. They are close in efficiency to monocrystalline solar cells, however, they are often less expensive.

Thin-film photovoltaic cells use semiconductors like gallium arsenide or cadmium telluride. These solar panels are generally cheaper to manufacture and are lighter and easier to mount in flexible substrates. They also contain materials that can be more hazardous and difficult to recycle at their end-of-life.

However, there are other types of thin-film technologies currently being developed for online markets that require less energy to produce, and are also expected to be more efficient and less costly in the future.

Voltage

Most solar panels are designed to produce 12 volts or 24 volts of DC current. The given voltages and amperages of solar panels impact how quickly they can charge batteries (higher amperages can reduce the charging time).

Placement

When placing solar panels on a boat, look for flat areas on the deck, above the cabin, or on a bow pulpit rail (or similar durable railing). If you're using rigid panels, you'll want to secure them to a flat area on the boat that you're not likely to walk on. You can also create a structure to mount them over the boat's cockpit.

If you're using flexible or semi-rigid panels you can attach them to shade biminis (if they have a firm structure) or curved parts of the boat directly. It's crucial to install them in a place where they won't be impeded by shade from other structures (like a sail or mast).

Depending on the type of boat, placing them high enough above the deck may also help reduce the amount of water and brine they get hit with, and help to reduce corrosion — particularly in salt water.

Controllers/Regulators

Connecting solar panels directly to a battery can overcharge it, and possibly lead to failure or even explosion. Integrated this way, they can also drain the battery at night.

To prevent this from happening, you'll want to use a controller or regulator when using solar panels to charge your maritime batteries. Charge controllers and regulators can also integrate multiple solar panels to properly charge all a boat's batteries.

If you're just starting with solar, consider buying a kit that includes a charge controller as well.

Panel, Kit, or Generator

When you're purchasing solar for your boat, you need to understand whether you're purchasing just a solar panel, a kit that includes a controller, or a solar generator. If you're adding to an existing solar system or replacing panels, you may only need more panels. If you're installing your first solar system on a boat, a kit may be better because it can tie into your existing battery.

A solar generator, however, is a solar kit that includes a lithium battery, built-in controllers, and usually an inverter. These portable systems also often have outlets that allow you to plug in your devices via USB, a DC connector or even an AC cord, and are popular for camping, RV-ing, and recreational boating.

Connections

If replacing or adding to a solar array or battery bank on a boat, make sure the solar panels are compatible. This is especially important when using multiple types of panels, particularly if you want to daisy chain them together before connecting them to a charge controller. Unless an advanced charge controller can handle panels of multiple voltages and wattages, the panels might not be able to provide as much charging power as they could with properly matched panels.

The connections between panels must also be able to work with each other, and the wires and connectors need to have a high degree of resilience and waterproofness (look for IP67-rated connectors) to last in the maritime environment. Many panels use MC4-style connections because they remain tightly attached and can withstand outdoor conditions.

Marine Ready

Normal solar panels are designed to last in harsh conditions for 20 years. Maritime conditions are even harsher, exposing solar panels, wires and electric equipment to corrosive water spray — or even worse — saltwater spray. As such, it's important that rigid solar panels are contained with corrosion-resistant aluminum frames and flexible panels are designed to resist corrosion as well. Similarly, all wires, electric boxes, and harnesses must be well-sealed with an inert material like silicone and waterproof. In addition, marine solar panels should have bypass diodes built into the solar cells to protect them from damage, or from cannibalizing the power produced by other solar cells in a system.

Sustainability

There's an argument to be made that switching to solar to power a boat's electronics is the most sustainable thing to do on the water. However, when it comes to the product's end-of-life, there are few options for recycling solar panels entirely. In fact, to the best of our knowledge and research, SunPower and Solitek are the only solar panel manufacturers that have achieved any Cradle to Cradle certifications. (SunPower is included in our selections, but Solitek specializes in commercial solar and home applications and does not produce marine panels.)

The most sustainable options are rigid glass silicone panels, which have the longest warrantied lifespan and are made from some of the more easily recyclable materials (primarily silicone, glass, and aluminum). Plastic and flexible solar panels are more difficult to break down and recycle and some thin-film solar panels are also challenging to recycle because some components in the cells are hazardous when not fixed in a solar panel.

If you'd like to know more, the EPA has more information about solar panel recycling and reuse available. The Solar Energy Industries Association (SEIA) also provides information about companies and resources for recycling solar panels.

11: Best Gaming Keyboards of 2022

The best gaming keyboards are crucial when it comes to keeping up with the competition. In PC gaming, it only takes one slip of the mouse or a single unresponsive key on your keyboard to cost you the match. So if you're serious about gaming, then it's important to take the time to find one of the best gaming keyboards, one that's reliable. Ideally, a keyboard should suit your playstyle, and hand size to help reduce muscle strain and hand fatigue.

The best gaming keyboards often come with adjustable key-travel distance, allowing the user to set the exact speed at which the key will trigger a response on the computer. Additionally, most gaming keyboards come with RGB backlighting, so you can choose the colors and patterns that your keyboard's light display, so that they match or complement your current gaming setup. Here are our picks for the best gaming keyboards for your next match.

— Best Overall: Razer Huntsman Elite Gaming Keyboard
— Best Mechanical: SteelSeries Apex Pro Mechanical Gaming Keyboard
— Best Budget: CORSAIR K55 RGB Gaming Keyboard
— Best Combo: Razer Cynosa Chroma Gaming Keyboard
— Best Wireless: Logitech G915 LIGHTSPEED RGB Mechanical Gaming Keyboard
— Best Customizable: HyperX Alloy Elite 2

HOW WE CHOSE THE BEST GAMING KEYBOARDS

Methodology

To develop this list, I used my experience from multiple years of building and tweaking gaming setups, while also extensively researching over 30 potential keyboards. Several of the products that I considered for this list but not selected include the G.Skill KM360 gaming keyboard, the Logitech G213 Prodigy gaming keyboard, as well as a Skytech gaming keyboard, and the Onn gaming keyboard.

For the purpose of selecting the best gaming keyboards, I focused on the size, shape, lifespan, and keyboard's interface, as well as the type of keyboard switch. Size and shape are relatively subjective factors. Some gamers prefer full-size, standard keyboards, while others look for mini keyboards that help save desk space. Similarly, the choice between wired or wireless interfaces is typically a more subjective decision, but preferences for both types exist, despite wired keyboards being more reliable for gaming. The most important factor was the keyboard switch (the button beneath the keys). A keyboard's speed and key response time is affected by whether the keyboard had mechanical, dome, or membrane switches.

Gaming requires quick, reliable controls, so keyboards that enhance the speed and precision of the user, or that demonstrate customizable features that improve the user experience were preferred over similar products.

We further explain how we test gaming equipment here.

THE BEST GAMING KEYBOARDS: REVIEWS AND RECOMMENDATIONS

Best Overall: Razer Huntsman Elite Gaming Keyboard

The Razer Huntsman Elite is the best overall gaming keyboard.

Why It Made the Cut: Take advantage of the precise, Razer Opto-mechanical key switch response time instead of getting caught with sticky and unreliable keys.

Specs:

— Size: Full size
— Switch: Razer Opto-mechanical
— Interface: USB wired

Pros:

— Light-based optical actuation
— Rapid response time
— Magnetic wrist rest
— Durable aluminum construction

Cons:

— Limited by wired connection

Experienced gamers will love the outstanding speed and response time of the Razer Huntsman Elite gaming keyboard because it uses Opto-mechanical key switches that provide rapid, light-based optical actuation instead of the slower response time of more traditional keyboard switches. The Razer Huntsman Elite Gaming Keyboard is the best mechanical keyboard for gaming because it's made of tough, durable aluminum, with ABS keys to help ensure that even if the keyboard gets knocked on the ground it won't sustain any damage.

Gamers who enjoy using wireless peripheral devices may not like that this product needs to be plugged in to work, but the tradeoff is that this keyboard has a long lifespan that ensures users won't need to replace this Razer gaming keyboard any time soon. Each key has its own backlighting, which allows users to customize its light pattern and color from over 16.8 million color choices. Gamers can also take advantage of the included magnetic wrist rest, which supports their wrist and hand during gameplay. For another option, read a review of the Razer Huntsman V2.

Best Mechanical: SteelSeries Apex Pro Mechanical Gaming Keyboard

SteelSeries Apex Pro Mechanical Gaming Keyboard is the best mechanical option.

Why It Made the Cut: This powerful gaming keyboard is a full-size option with a built-in OLED display for adjusting settings, accessing Discord, and more making it our pick for the best gaming keyboard overall.

Specs:

— Size: Full size
— Switch: Omnipoint adjustable
— Interface: USB wired
Pros:

— Adjustable actuation distance from 0.4 millimeters to 3.6 millimeters
— Built-in OLED display
— 16.8 million colors
— Magnetic wrist rest

Cons:

— Limited by wired connection

The SteelSeries Apex Pro has a smart design and suitable size for dedicated gamers who want quick, responsive mechanical keys that can help them clinch the match. Users can adjust the SteelSeries gaming keyboard's actuation distance from 0.4 millimeters to 3.6 millimeters to increase or decrease the response time of the keyboard. This feature is due to the Omnipoint adjustable mechanical switches, which make this product amazing for toggling from fast-paced first-person shooters (FPS) to slower role-playing games (RPG) that don't require the same trigger speed.

The Apex Pro features an OLED display with which the user can change settings, check Discord, jump into Spotify, and more. It even has a pass-through port that makes it possible to connect a USB device, like an external hard drive or a jump drive, directly to the keyboard, so it doesn't take up a precious USB drive. However, if a user prefers to play with a mini keyboard or wireless keyboard, then this wired, full-size product isn't the best option.

Best Budget: CORSAIR K55 RGB Gaming Keyboard

The Corsair K55 RGB Gaming Keyboard is the best budget gaming keyboard.

Why It Made the Cut: This affordable, dome-switch gaming keyboard lets users enjoy hours of fun without emptying the wallet.

Specs:

— Size: Full size
— Switch: Dome
— Interface: USB wired

Pros:

— Programmable macro keys and dedicated media keys
— Detachable palm rest
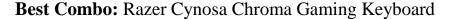— IP42 dust and water resistance
— Affordable price

Cons:

— Slower response time than mechanical keyboards
— Limited by wired connection

This nicely priced CORSAIR K55 RGB Gaming Keyboard is the best budget gaming keyboard because it's an ideal option for gamers that want to update their setup without having to spend hundreds of dollars on a premium product. The Corsair K55 has multiple color profiles and even comes with a removable wrist support, so users can customize both the look and feel of their keyboard to match their playstyle needs and aesthetic preferences. However, gamers that tend to stick to fast-response games, like first-person shooters (FPS), may notice that the

dome-style key switches are not as readily responsive as most mechanical key switches, which means this gaming keyboard may be better for slower-paced games.

The keys are incredibly quiet, which makes this product ideal for gamers who are tired of the noisy click-clack of mechanical key switches. The keyboard also has an anti-ghosting feature that ensures that keyboard inputs register in-game even if there are simultaneous key presses. This keyboard is a wired option however, so for gamers looking for a wireless device, this isn't the right product.

Best Combo: Razer Cynosa Chroma Gaming Keyboard

The Razer Cynosa Chroma is the best combo.

Why It Made the Cut: Get this membrane gaming keyboard and enjoy quiet, cushioned keystrokes that won't leave you shaking out lingering finger pain after each match.

Specs:

— Size: Full size
— Switch: Membrane
— Interface: USB wired

Pros:

— Soft-touch membrane key switches
— Individually backlit keys
— Built-in key rollover anti-ghosting feature
— Includes extended gaming mousepad

Cons:

— Slower response time than mechanical keyboards
— Limited by wired connection

The high-quality Razer Cynosa Chroma gaming keyboard is an excellent option for long-time gamers that prefer the feel and responsiveness of membrane key switches. These key switches help to relieve finger tension and fingertip pain that can set in after playing long matches. In addition to the keyboard, gamers also get to enjoy the included extended-size gaming mousepad, which gives your mouse extra room.

The Razer Cynosa Chroma Gaming Keyboard is a great choice for gamers that tend to hit more than one key at a time when firing commands or performing actions. That's because this keyboard has a built-in key rollover, anti-ghosting feature that ensures the keyboard inputs register in-game even if there are simultaneous key presses. Personalize this gaming keyboard using the individually programmable backlit keys that can be customized with unlimited patterns and over 16.8 million colors. However, before you make your purchase do keep in mind that the Cynosa is a wired keyboard, and that membrane key switches have a slower response time than most mechanical switches.

Best Wireless: Logitech G915 LIGHTSPEED RGB Mechanical Gaming Keyboard

Logitech G915 LIGHTSPEED is the best wireless.

Why It Made the Cut: Avoid broken wires and limited space when you make the switch to our pick for the best wireless gaming keyboard.

Specs:

— Size: Full size
— Switch: Logitech GL low profile
— Interface: Wireless

Pros:

— Portable wireless connection
— Durable aluminum construction
— 30 hours of gameplay on a full charge
— Five programmable keys for custom macros

Cons:

— Wireless connections can experience latency delays

Many gamers like to move around in their gaming chair or even get up and walk around an office or living room while they stay connected to the game. However this isn't possible with wired peripheral devices. The Logitech G915 LIGHTSPEED RGB Mechanical Gaming Keyboard solves this problem with 30 hours of battery life, despite taking just 3 hours to fully charge. This gives gamers

the freedom they want to move around without having to take their hands off the controls.

The Logitech G915 Lightspeed gaming keyboard is an excellent option for both new and experienced gamers, boasting a quick response time due to the reliable Logitech GL low-profile mechanical key switches. The hardware is made of tough, durable aluminum that helps protect the device if it gets knocked off your desk. This gaming keyboard also features five keys that can be programmed to match the user's preference, allowing experienced gamers to set custom macros for their favorite titles. It should be noted however that wireless keyboards and other wireless gaming devices can experience latency delays that can make them slower than wired products.

Best Customizable: HyperX Alloy Elite 2 Mechanical Gaming Keyboard

The HyperX Alloy Elite 2 mechanical keyboard is on sale as part of HP's Labor Day deals.

Why It Made the Cut: The HyperX gives you all the customization and control you need to get the job done.

Specs:

— Size: Full size
— Switch: HyperX mechanical
— Interface: USB wired

Pros:

— Customizable per-key lighting and effects
— Compatible with PC and console gaming
— Weighted frame prevents slippage

Cons:

— No wrist rest

A perfect addition to your tricked-out gaming setup, streaming base, or editing studio, the HyperX Alloy Elite 2 Keyboard is equipped for customization, to bring control to your fingertips. The solid steel frame and mechanical keys create a weighted, sturdy feeling to avoid slipping or fumbling when typing or gaming away. Easily adjust your audio with a large volume wheel, swap between media, profiles, and Game Mode with dedicated keys, and customize your per-key lighting and effects.

For a more unique, bright aesthetic, the HyperX Alloy Elite 2 incorporates translucent ABS pudding keycaps and a light bar with RGB effects, so you can switch between work mode and gaming mode, or keep the party going all day long. This keyboard features multi-platform compatibility, so you don't have to change out your gear when swapping between PC or console gaming. For such a multi-functional piece of equipment, this incredible price really sweetens the deal, too. -Mia Huelsbeck

THINGS TO CONSIDER BEFORE BUYING A GAMING KEYBOARD

It's best not to rush your decision when it comes time to replace your old gaming keyboard. First think about the size of the keyboard you prefer, whether you want mechanical or membrane keys, as well as the interface, lifespan, and the switch type that will work well for you.

Size and Shape

The size of a gaming keyboard typically falls into one of three different categories. These include full-size, Tenkeyless (TKL), and 60 percent. The shape of the keyboard is usually described as unsplit (unibody), partially split, or fully

split. Most keyboards are full-size, unsplit products that deliver the classic look and feel of a gaming keyboard.

If your gaming setup is relatively small, then it may be beneficial to go with a TKL or 60 percent keyboard which reduces the amount of space that you'll need to enjoy your favorite game. Users that experience pain or discomfort while typing should consider a partially split or fully split keyboard that allows the user's hands to sit in a more natural position while typing, instead of being angled inwards.

Interface

A keyboard's interface refers to how the keyboard connects to your computer. Typically a gaming keyboard connects to a computer through a wired USB connection. That said, some products offer a wireless interface, which allows users to get up and move around with the keyboard, instead of giving up control when they want to stretch.

There are benefits to both styles of keyboards, though most gamers prefer the reliability of a wired connection over the freedom of wireless. The main reason for this is that a wireless keyboard can experience latency delays that could affect gameplay, while wired keyboards don't typically have this problem.

Rated Lifespan

The rated lifespan of a gaming keyboard is sometimes provided by manufacturers, though many products don't provide this information. This factor refers to the expected lifespan of a keyboard based on the number of keystrokes it's meant to support. It's beneficial to check the rated lifespan of a gaming keyboard in order to have a basic idea of how long the keyboard will last before it starts to show signs of wear. You will need a decent estimate of your daily keystrokes to quantify a basic lifespan.

Switch Type

A key switch is the term used to refer to the series of components that make up a key on a keyboard. Basic categories include mechanical, dome, and membrane switches, though the types of mechanical switches can get significantly more detailed depending on the purpose of the keyboard.

Mechanical switches have individual switches under each key that are activated when the user pushes down. These keys can be linear, tactile, or clicky: Linear refers to consistent, smooth movement, tactile keys have a bump in the middle of travel around the actuation point, and clicky keys have the same bump as tactile

keys except clicky keys make a sharp "click" sound to notify the user that the key has been successfully pressed.

Dome switches are a hybrid of mechanical and membrane keyboards. They have soft domes on top of each switch and two circuit board traces under the keys, instead of relying on membrane layers. This design helps to improve the tactile response when the keys are pressed.

Membrane-switch keyboards are built for affordability and comfort, though they lack extra-fast response time. These keyboards feature two membrane layers underneath the keys that come into contact with one another when the keys are pressed, triggering a response. One major benefit of membrane switches is that they are lightweight and much quieter than both dome and mechanical keyboards.

School of Food and Agriculture Sciences

1: You will Never Have to Ask "What's for Dinner?" Again with These Fun DIY Cooking Kits

You don't have to be Gordon Ramsay to create delicious showstoppers at home. It can be difficult to find the time and energy to cook homemade meals and treats; just searching for the correct ingredients and getting everything measured out properly is enough of a hassle. But, there's really something about food made by yourself or with friends and family that tastes so much better than getting a pizza delivered.

Luckily, there are lots of DIY cooking kits created with the convenience-driven chef in mind. These kits make for a fun activity for a Sunday afternoon, when you're feeling snacky and don't want to go out, or whenever you're in need of some inspiration for a midweek meal. A great choice for gifts or for keeps, there's truly something for everyone. So, preheat the oven and grab an apron — it's time to get creative in the kitchen.

DIY Focaccia Garden Art Kit

Key Selling Point: For the artistically inclined baker, this kit lets your imagination run wild.

Focaccia is delicious on its own, but when you decorate it with fresh produce, it becomes a scrumptious work of art. This garden art kit is great for bakers and artists of any level, and provides you with everything you need to make memorable focaccia. The kit comes with the base as well as Italian seasoning, flakey salt, food tweezers, and a focaccia art gallery to inspire you. All you need to bring to the table are your desired toppings, like vegetables, cheese, or fruits, and of course, some creative ideas. Will you make grass out of asparagus, or create a sun from an onion slice? The sky's the limit. And the best part is that after you've worked away on your masterpiece, a tasty snack is your reward — what could be better than that?

Sushi Making Kit

Key Selling Point: This beloved Japanese dish always tastes best when it's fresh, and this comprehensive DIY kit ensures you get a crisp roll every time.

Skip the Door Dash delivery and make your own handcrafted spicy tuna or California rolls. Whether you're looking for a fun, cheap date-night idea, a gift for your food-loving friend, or you're wanting a new challenge to tackle in the kitchen, this cooking kit will surely satisfy. Included in this set you'll find nearly everything you'll need to make tasty sushi rolls (aside from your chosen fillings). You'll save yourself the trouble of finding a bamboo rolling mat, sushi rice, rice vinegar powder, nori, sesame seeds, and wasabi powder at the store. Just grab some fish or avocado and you're ready to roll. The helpful guides included in this kit, like cooking instructions, a shopping guide, and drink pairing suggestions, will help point you in the right direction. Although this cooking kit is intended for more experienced — or at least more daring — chefs, if things don't go to plan, your creations will still taste great and be a heap of fun.

Chocolate Babka Baking Kit

Key Selling Point: You don't have to visit Chicago's popular Mexican-Jewish artisanal bakery to try their famous babka.

For an easy, sweet treat, this Chocolate Babka Baking Kit is the perfect indulgence. Made by Masa Madre, a Chicago-based bakery that's famous for their delicious Mexican-Jewish fusion breads, this kit comes equipped with most of the things you'll need to recreate their most iconic braided dessert bread. You'll receive all of the dry ingredients, a wooden rolling pin, bench scraper, and of course, the recipe card. The owners of Masa Madre are passionate about implementing the most ethical practices and eco-friendly materials, so they've also included two compostable loaf pans. All you need in addition to the kit are some eggs, oil, butter, and a handful of kitchen tools (things most people have to hand already), and you're on your way to chocolatey paradise. This recipe yields two whole loaves, so you can keep one and gift the other — or eat both yourself. No one would judge you.

Spain - Kid's Global Adventure Cooking Kit

Key Selling Point: Explore the world with your kids (from the comfort of your kitchen), and learn about different countries along the way.

Take your kids on a quick trip to Spain without stretching your wallet or boarding a plane. The Kid's Global Adventure Cooking Kits have a variety of countries to choose from, each with vibrant fact sheets, activities, and three recipes to select from. For a Spanish feast, get your kids excited to try paella, tapas, and veggies; three family-sized meals with authentic flavors. The shopping list in your kit will advise you on the fresh ingredients needed, while everything else you'll need is included, including spices, grains, and sauce mixes. Plus, the kit comes with a fun

cooking tool for your little one to take the reins on tonight's dinner. You can take note of each country visited with an included "Foodie Passport" and look forward to the cuisine you'll get to try next. This educational cooking experience will have the whole family looking forward to a delicious meal each night.

Pasta Art Kit

Key Selling Point: Turn your favorite Italian dish into a stunning chef-d'oeuvre.

Spaghetti night just got kicked up a notch. With this Pasta Art Kit, transform your bland-looking farfalle or linguine into vibrant noodles naturally, using plant- and vegetable-based dyes. All of the dry ingredients are included to make your dough, and then you can brighten them up with beetroot, turmeric, spirulina, sweet potato, or carrot for a rainbow feast fit for eight to 10 servings. In addition to the dry ingredients, you'll receive a pasta wheel and a dough cutter set, so you can cut and shape your pasta however you like, or have a look through the included booklet to get inspired. Whether you're cooking with the kids or want to treat yourself to a pretty, homemade dinner, the possibilities are endless.

Pad Thai Cooking Kit

Key Selling Point: This kit couldn't be more authentic — unless you went to Thailand to gather the ingredients yourself.

This Pad Thai Cooking Kit will absolutely ruin your local takeout for you. The saucy, savory, zingy meal's ingredients are vegan, gluten-free, and organic. The authenticity of this dish is maintained by Somkiat and Pornpan Wongprasert, who source the ingredients from their farm in Thailand, so you know you're getting the very best. Included in this cooking kit are your noodles, sauce, seasoning, optional chili for some extra heat, and of course, peanuts. All you'll need to add is your desired protein and vegetables, like chicken, green onions, cabbage, or bean sprouts, allowing you to customize the flavors to your liking. This delicious Thai favorite takes only eight minutes from kit to plate, making it a great choice for a cheap, last-minute dinner for one, or split between two for a romantic date night. Just don't forget the lime!

Gourmet Pizza Dough Gift Set

Key Selling Point: A fun, hands-on gift for the pizza-lover in your life.

The topic of what pizza crust is best is a source of much debate. Chicagoans know deep dish to be the best pizza base, while Italians will fight for their classic Neapolitan style. With this Gourmet Pizza Dough Gift Set made by Urban Slicer, you can put three styles of pizza dough to the test and determine which is truly the reigning champ. While the deep dish- and Neapolitan-style mixes may be

pretty straightforward, the outdoor grilling mix gives you the chance to explore new ways of cooking, as it's best for cooking over hot coals. This mix is also great for calzones, garlic knots, or even tortillas, so you can change it up and avoid pizza burnout. Each of the three packs included in this set yield two pizza bases and they couldn't be easier to make — just add water and knead away. When you're not sure what to get for your foodie friends and family, give the gift of pizza.

Molecular Gastronomy Kit

Key Selling Point: This kit brings new meaning to "DIY" with a culinary-science experiment hybrid.

Eating is meant to be an experience, and what better way to enjoy familiar flavors than to deconstruct favorite dishes and experiment with textures to create something unique? The Molecular Gastronomy Kit is a great way to try something new, or to impress friends and family with your Michelin star-level creations. Included in this bundle are 20 sachets of food additives, good for one recipe each, as well as all of the tools you'll need: pipettes, spoons, tubes, a silicone mold, food-grade syringe, and a book to get you started on your molecular gastronomy journey. With so many sachets included, you can experiment over and over with everything in your kitchen. Transform your foods into gels, powders, beads, strands, and more — the only limit with this comprehensive DIY kit is your imagination.

2: Scientists Cook Comically Tiny Lab-Grown Hamburger

A team of scientists at UCLA say they've cracked the code on how to scale up the creation of lab-grown meat, potentially paving the way for mass production of the environmentally friendly alternative.

But we can't help but feel just a little underwhelmed when looking at the fruits of their labor: a tiny, adorable burger patty that may brown nicely in a pan — but is barely bigger than a quarter, making it lilliputian even by slider standards.

The team, led by UCLA biophysics professor Amy Rowat, created a special new particle that they say allows cultured meat to take on a more natural, muscle-like texture.

These customized muscle cells could not only make it more feasible to grow these structures into larger, edible tissues, but could also make the process cheaper and faster as well, the team argues in a new paper about the work.

"Animal cells that can be coaxed to form tissues similar to meats could offer a protein source to a world facing food insecurity caused by threats ranging from epidemics to natural disasters," said Rowat in a statement.

While scientists have previously managed to grow ersatz animal flesh in a lab, producing cultured meat at scale for food production has proven far more difficult.

"Cultured meat products are not yet on the market in the US and strategies to enable mass production are still emerging," Rowat added.

Conventional approaches involve growing a scaffold of animal tissues and collagen, an often highly laborious and expensive process. At volume, companies have tried to grow cells in large bioreactors, but the resulting meat slurry tends to lack the texture of the real thing.

So Rowat and her team came up with new "edible microcarriers" that can provide the structure and texture of real meat. Using ingredients such as gelatin and transglutaminase, a "meat glue" that's commonly used as a binding agent, the researchers built special microcarrier enzymes into embossed groove structures that later grew into clumps all by themselves in early tests involving mouse precursor cells.

"We were excited to see a trend toward quicker growth of muscle cells cultured on the grooved microcarriers," said Stephanie Kawecki, a coauthor and one of Rowat's students, in the statement. "Any time reduction of cell culture time can

significantly reduce the cost of cultured meat production, especially when these processes are brought to scale."

But there's clearly plenty of work left to be done. As seen in photos in the team's paper, the resulting microtissues, which were "formed into a cohesive meat product" just under an inch across, melted into a brownish puddle when cooked for just under nine minutes on a hot griddle.

Despite the arguably lackluster looking end product, the scientists are excited about the work.

"The fact that we can grow large amounts of protein-rich muscle tissue in a stirred bioreactor is a major step in upscaling the production of true cultured meat," coauthor Sam Norris said in the statement.

In other words, it's one tiny hamburger patty for man, but a huge potential hamburger for mankind.

3: Review on Breville Smart Scoop Ice Cream Maker Is Too Cool To Fail

Long gone are the days of arduous hand-cranked ice cream machines, and the Breville Smart Scoop ice cream machine is proof positive of that. For most of frozen dessert history, if you wanted a pint of the good stuff, you either had to have a fair amount of forearm strength or know some neighborhood kids you could trick into cranking a device under the guise of it being "sort of like playing Pac-Man." But even with electronic ice cream makers, you're going to have discrepancies in power and product output. Smart Scoop is one of the most powerful ice cream machines on the market right now, and it's got a premium price tag to match. But is the machine's potential worth the investment or will it leave you cold—and not in a good way? Here's a thorough review of the Breville Smart Scoop ice cream maker, its features, and its capabilities.

WHAT IS THE BREVILLE SMART SCOOP ICE CREAM MAKER?

Specs:

— Dimensions: 7.2 inches L x 16.2 inches W x 10.7 inches H
— Weight: 30 pounds
— Bowl Capacity: 1 liter
— Materials: Stainless steel
— Power: 165 watts
— Voltage: 110-120 volts
— Settings: Sorbet, Frozen Yogurt, Gelato, Ice Cream
— Accessories: Removable bowl, Ice cream paddle, cleaning brush

Electronic ice cream makers aren't terribly new, but super automatic models like Breville Smart Scoop have grown in popularity in recent years. But what separates the special Smart Scoop from its weaker competition? Before we address that, let's take a quick look at the history of homemade ice cream makers.

HOMEMADE ICE CREAM TECHNOLOGY, A QUICK PRIMER

There are more than enough ways to churn your cream. If you have some spare liquid nitrogen laying around, you can pour it slowly into a prepared ice cream base, and have a big bowl of some seriously smooth, slightly carbonated frozen dairy. I'm willing to bet most ice cream made at home — and in fact, in professional settings — is made utilizing the same science that was first developed by Nancy Johnson with her 1843 "Artificial Freezer" patent. Ice cream base (cream, milk, sugar, etc.) goes in a metal cylinder that is housed inside another cylinder that contains ice and rock salt, creating an incredible amount of cold. A crank moves a paddle inside the cylinder, freezing the base while

incorporating air and scraping the mix from the side of the bowl until you're left with a thick, delicious dessert. You can still buy a machine that essentially does just this, but it's a bit too Mayberry for my taste.

Once you toss electricity into the mix, many of these devices no longer needed physical labor, but they still required regular changes of ice and rock salt. Then came the innovative freezer bowl, an insulated number filled with a saline solution. The contraption mimicked the science of ice and rock salt, which you freeze overnight before using. If you have the freezer space, you can simply park it there perpetually, so it's ready for you anytime you want to churn a pint or two. Of course, once the mixture inside the bowl melts, you've got to refreeze it, so it's not efficient.

What is efficient are machines like the Breville Smart Scoop. They too churn ice cream, but instead of a freezer bowl to contend with, these machines are run by powerful compressors. Think of it as a much scaled-down version of McDonald's soft-serve machine that's always broken when you're craving a McFlurry. Since there's no downtime with needing to refreeze a freezer bowl, you can make batch after batch after batch of sorbet, ice cream, and plenty of other treats.

Design

The Breville Smart Scoop machine and the accessories that come with it including the churning bucket, paddle, spatula, and cleaning brush.

The Breville Smart Scoop machine and the accessories that come with it including the churning bucket, paddle, spatula, and cleaning brush. Jaime Carrillo/Futurism

If it's a big, gorgeous, pricey machine in a shiny, stainless-steel package, you can bet it's a Breville. I know stainless steel is more or less standard when it comes to kitchen appliances, but Breville steel is premium quality. Perhaps it's because these appliances are fairly reliable, and at their price points, they better be. There are plenty of options for ice cream makers, but Breville keeps it simple with an easy-to-read LCD screen and only a handful of buttons and a dial that sets the desired texture of the finished product.

The Smart Scoop is massive and heavier than it looks. The churning bucket takes up a very small space on the machine, and unlike other compressor-powered ice cream machines, you can lift it in and out. While it churns, a small plastic lid covers the bowl, though there's a small flap on it so you can add mix-in ingredients like chopped fruit, nuts, or candy.

The Breville Smart Scoop is an absolute tank, but it's not just a device that takes up precious real estate on your countertop. There are no special preparations needed to operate this machine. No ice, no rock salt, and no pre-freezing. Some users even reported adding ingredients directly to the bowl and turning the Smart Scoop on. Using the dial, you can select between twelve automatic hardness settings including sorbet, frozen yogurt, gelato, and ice cream. If you prefer, you can go manual and set a timer to churn your mix for a desired amount of time. Because ice cream making is the art of adding cool to liquids, you can switch between Fahrenheit and Celsius with a single button. There's also a button that pre-cools your mixture, so you can skip the annoying step of allowing a cooked mixture to cool to 30 degrees Fahrenheit before churning. And once a mixture is done churning, there's a button that will keep it cold for up to three hours.

BREVILLE SMART SCOOP REVIEW: IS THE ICE CREAM MAKER WORTH THE PRICE?

Making homemade ice cream is a time-intensive procedure. A base that's 20 percent sugar must be mixed up first and typically cooked on a stove. Churning something hot is going to resemble something more like weird soup than Haagen Dazs, so you need to cool a mix down before putting it in a machine. After a mixture is churned, you then have to pack the aerated mixture and then transfer it to the freezer for another four to eight hours. How do you make homemade ice cream? With patience, of course. If done correctly, a powerful machine like the Breville Smart Scoop may cut down on these arduous hours.

The first of many ice cream adventures would begin with a batch of homemade peach ice cream, an almost ancient Alton Brown recipe that I've been making for years. First, I cooked the base on the stovetop, and allowed it to cool in the fridge overnight. I then poured the pale orange mixture into the churning bowl, closed the lid, and selected the hardest hardness setting. The mixture was fresh from the fridge, so I didn't bother with the pre-cool settings just yet. A watched pot never boils, and a watched ice cream machine never churns, so I walked away for about ten minutes and let the Smart Scoop do its work.

Ten minutes later, not much had happened. I was wondering if I had somehow installed the bowl incorrectly. But there wasn't smoke coming out the Smart Scoop and the mixture was thickening up somewhat. I stuck around just in case something did go wrong though. Another ten minutes went by and I peeked at the mixture once again. Yes, it was thicker than before, but it was still not nearly as thick as I wanted it to be at that juncture. After half an hour, I was instructed by the machine to add in mix-ins if I had any. I did: some chopped-up peaches. I used the little mix-in flap and added them without incident.

I won't bore you with the play-by-play any more than I already have. But the peach ice cream base took almost an hour to churn to perfection. It was the longest I've waited for a mixture to churn, though I was greeted with a charming little tune when the Breville Smart Scoop finished its task. The churning bowl has a thin metal handle on it, which allowed me to remove the mixture to pack it in an airtight container to set up completely in the freezer. The paddle that came with the machine was great for getting every ounce of ice cream out.

The churning process may have been a little longer than normal, but once the ice cream was set in the freezer overnight, I scooped out one of the best batches of homemade ice cream I've ever made. The texture was dense and slow melting just like the kind you pay upwards of eight dollars a pint at the grocery store.

The Smart Scoop also has useful capabilities beyond cranking out ice cream. One Saturday morning, I was busy squeezing limes to make a batch of margarita mix for a backyard summer picnic lunch with friends. The Breville Smart Scoop caught my eye and inspired me to ditch the blender and churn my cocktails instead, tequila and all. In about half an hour, the margarita mix was a slushy consistency. I planned to freeze what was left into a sorbet, but four thirsty folks devoured every ounce.

The Smart Scoop comes with 12 hardness settings that are divided between four different ice cream styles. This provides plenty of options as far as texture goes but if I'm being honest, I can't ever see myself using anything but the hardest texture setting for anything freezer bound. On another occasion, I churned some sorbet mix using the suggested sorbet setting and froze it hard. The texture was far icier than I would have liked and didn't have that dense mouthfeel I want out of ice cream, homemade or otherwise. Luckily, all I had to do was allow this bad batch to melt and rechurn it. The stakes are far lower with Breville Smart Scoop, and you can try out different hardness settings on the fly to see which one is right for you.

Speaking of playing with your food, after the successful margarita incident, I started looking around my kitchen to see what I could toss inside this ice cream maker and turn into something cold and delicious. Who amongst us doesn't go to the farmer's market to take advantage of summer's bounty, only to be left with a bowl of fruit that you keep walking past on your way to the kettle chips? Dietary choices aside, it's a shame to let such great fruit go to waste. In the past, this fruit would be dispatched with a knife and frozen for smoothies and jam. The aforementioned sorbet I made was a melange plum, strawberries, raspberries, and blackberries that looked like they were minutes from spoiling. A quick spin in the blender equalized everything into a gorgeous burgundy liquid which I sweetened

up with sugar and a little lemon juice for brightness. What Smart Scoop churned out was a refreshing sorbet made from stuff that could have easily been destined for the compost bin.

While the hardness settings don't really do it for me for anything destined for the deep freeze, that doesn't mean they are altogether unnecessary. The Breville Smart Scoop spits out a loud ding every time it goes from one of the four main hardness settings, so you can assess the texture of your product through the see-through lid. Pulverized fruit made delicious sorbet, but if I stopped along the way, I could have enjoyed a smoothie bowl or something resembling a Jamba Juice. The same principle applies to dairy-based mixtures, making the Breville Smart Scoop more than capable of making milkshakes, soft-serve, and previously impossible treats in the home environment. I turned some sweetened half and half and chopped up cookies into a delicious Stroopwaffle McFlurry, the international treat that isn't available stateside. And like a good McFlurry, it was so thick it held its own even when turned upside down. As with any good kitchen appliance, Breville Smart Scoop lets choose the way you want to churn, and not just with the automatic settings it provides. Still, I can't imagine ever truly tapping into the manual settings considering that even the automatic settings allowed for quite a bit of customization. The option is a welcome one though, especially when compared to other ice cream makers on the market.

The Breville Smart Scoop ice cream maker is fairly good at what it does, but it's not the only compressor-style ice cream maker on the market. I figured it might make sense to compare it to two other popular compressor-style ice cream machines, including one that's a little more affordable and one that's a good bit pricier.

— **Cuisinart ICE-100 Ice Cream and Gelato Maker:** This machine is a little bigger than the Breville Smart Scoop, but a few pounds lighter. Newer models have the removable ice cream bowl, and it comes with two paddles, one for ice cream and one for gelato. As far as customization goes, though, the options are incredibly limited. There are no hardness settings, no fun jingle alerts, just a timer that churns ice cream for up to 60 minutes. It does churn ice cream a little quicker than Smart Scoop, but the finished product is nowhere near as dense and creamy. It's not altogether a bad machine but has far fewer features than Breville Smart Scoop.

— **Lello Musso Pola:** This massive, nearly 70-pound tank is so expensive it's typically only used in restaurant kitchens. Powerful as it may be, it's nowhere near as user-friendly as the Breville Smart Scoop. There's a timer, and one switch that turns on the compressor, while the other spins a big paddle that churns

whatever you put in it. It operates fast, and the ice cream, sorbet, and gelato that this spits out are ungodly delicious. Sadly, there is no removable bowl here, so getting every ounce of finished product out of it is annoying and almost impossible. Cleaning it is even worse, especially when compared to both the Cuisinart and Breville Smart Scoop.

FINAL THOUGHTS ON THE BREVILLE SMART SCOOP ICE CREAM MAKER

Making homemade ice cream is incredibly rewarding, and Breville Smart Scoop is one of the easiest and most versatile compressor-style machines on the market. It may be more than you'd like to spend on any style of ice cream machine, but it does much more than crank out a solid batch of butter pecan. To say that it only makes ice cream, sorbet, and gelato would be a gross understatement of Smart Scoop's full capabilities. If it's a liquid and about 20 percent sugar, Breville Smart Scoop will turn it into frosty goodness. This includes making an actual Wendy's Frosty, which is nothing more than chocolate milk and condensed milk churned until thick. For a compressor-style machine, the Smart Scoop a mid-priced model, and unlike the even glitzier machines, it doesn't require any special training to use. Just make sure you can dedicate the countertop space to it because its size matches its power.

School of Media and Communication Studies

1: Lyric Massager Uses Sound Science for Reliable Pain Relief
What is the lyrics Massager?

Specs and Features:

— Dimensions: 2 inches L x 8.75 inches W x 4.5 inches H, with stand
— Weight: 1.75 pounds, with stand
— Therapy Modes: Soothe, Calm, Rest, Energy, Four Corners
— Rhythms: Aura, Boost, Center, Flow, Harmony, Range, Vitalize

Designed For Everyone: There's no need to do any research or to become a certified massage therapist. Lyric is a fantastic self-care companion built for all manner of schedules and lifestyles, complete with a user-friendly touch screen.

Reimagined Pain Relief: Lyric Massager works alone, or with easy guided modes to safely stimulate muscles and the nervous system to do everything from relieving pain to energizing you to start the day.

Gorgeous Enough to Show Off: It's not all function, there's plenty of form here too, with an attractive and low-profile design that works with just about every single room's aesthetics. This means that not only will you use it more, but it will always be within arm's reach.

Seriously Smart: Because it connects to WiFi, the Lyric Massager gets constant firmware updates so your wellness experience is as optimized as possible.

Lyric Massager Review: Is It Worth It?

There are countless massagers on the market, with some brands practically synonymous with the whole concept. These devices work more or less the same, utilizing a vibrating head that simulates a good deep-tissue massage, depending on how hard these machines go. What sets the Lyric apart from other massagers is that it's primarily powered by vibroacoustic science. If you've ever heard of "pressure points" or "chakra," this concept isn't new, but Lyric does its best to tap into it using its many guided therapies. The whole concept sounded a little bit too New Wave-y for my tastes, but as someone over 30 who aches daily for seemingly no reason, I was willing to give the whole concept a shot.

Lyric Massager comes in a fairly attractive charging base, which also houses four different massaging heads. Once parked in a place, it's hard to tell what you're looking at. Luckily, it looks great, so you don't have to tuck it in a drawer when you're not using it. A USB-C cord connects to the base, where the device charges once you place it on it.

In my first foray into using Lyric, I scrolled through the touch screen and selected one of the available therapy modes. As someone who can't survive the day without a pint of coffee before midday, my eyes immediately went to the "Energy" mode. From there, the touch screen instructed exactly where to put the massager, right on my left collarbone. With a ding, the machine started, and while it was targeting my collarbone, I felt the sensation vibrate from my upper arms to my neck, and even near my forehead. It was a jarring, but not altogether terrible sensation. After both collarbones, Lyric went to work on my inside palms, shins, and finally on the bottom of each foot. This three-minute massage session didn't provide a caffeine buzz, but it did leave me feeling strangely refreshed.

Each massage is fully guided and attacks special pressure points on the body depending on what sort of relief you're looking for. Around bedtime, the "Calm" mode does help center me before I count sheep, especially as someone who stares at a big bright screen most of the day. At the moment, most of the pain I endure regularly is fairly manageable, the usual ravages of time and a lifestyle that includes far more joysticks than situps. My spouse, however, deals with chronic pain daily. At this point, it's no longer our massager, as much as it is their massager. And while we both use it, the device is parked in their office. Lyric Massager and its vibroacoustic modes haven't cured my spouse's chronic pain, on some nights, they do relieve them quite a bit. "Ah, that's some good gravy," they usually say, using the Lyric Massager as we enjoy our evening couple's TV time. No, this massager does not dispense a sauce of any kind, but I assure you, if something is "good gravy," it's seriously stellar.

Whether or not you buy into the literal sound science behind the Lyric Massager, it is one of the most user-friendly self-care devices on the market. Other massagers provide guided modes too, but sometimes make you boot up an app on your phone to see them. Lesser models provide little to no instructions, simply giving you a device and expecting you to simply use it on spots you'd like to press the kinks out of. Barebones, but not always ineffective. Still, the modest miracles Lyric performs when it comes to pain relief make it user-friendly, considering how simple its interface is. For a solid out-of-the-box self-care experience at a reasonable price, Lyric Massager is highly recommended.

Department of Political Science and International Relations

1: Horrific Simulation: Nuclear War Would Kill Five Billion People

For the better part of the last century, one question has dogged humanity: what would happen after a nuclear war?

Climate scientists devised a terrifying simulation to find answers, published in the Nature Food journal this week, and the results are nothing short of apocalyptic.

The waves of terror would be almost impossible to comprehend. Death at ground zero for miles around. Famine. Radiation. Climate destruction. It's all there, and all as horrific as imaginable.

As the researchers at Rutgers noted in their study, it wouldn't even necessarily take two global superpowers to lead to mass death.

If any nuclear-armed country were to attack another with a nuclear weapon — the scientists used the lengthy geopolitical dispute between India and Pakistan over the Kashmir region as an example — not only would they kill countless people at and around the site of their target, but the soot from the detonations would cause such devastation to the global climate that upwards of five billion people would be at risk of death. For perspective, that's more than half the global population.

While this all sounds very "Biblical plague," the Rutgers climate science simulation is grounded in atmospheric science. The soot from the blast and the leftover burning could be enough to partially or completely encircle the planet, the study found, which would in turn result in further global cooling and harm agriculture so harshly that there would be a reduction in food production from anywhere between 7 and 90 percent, depending on the size of the nuclear conflict.

A India-Pakistan-sized war would blast between five and 47 million tons of soot into the atmosphere. If the US and Russia were to have it out, it would release 150 million tons of soot, cutting the global food supply by 90 percent. That level of famine would lead to death at an incredible scale within the first three to four

years after a war, and would add to the death toll of the blasts and their aftermaths as well.

While these horrific scenarios are absolutely nightmarish, the researchers did note a few caveats. First, that the simulation required lots of simplifications and presumptions about how global food supply chains would react during nuclear winter. And second, even in worst-case scenarios, there are regions that could fare better than others, with Australia seeming to fare the best on their devastation-prediction maps.

"The first time I showed my son the map," Lily Xia, the Rutgers climate scientist who led the research, said in a Nature new release, "the first reaction he had is 'let's move to Australia.'"

Nonetheless, the findings from this simulation are jarring and should be taken as seriously as a heart attack.

"A large percent of the people will be starving," Xia warned. "It's really bad."

Given these stark possibilities, it's very hard to argue.

2: Russia Warns That Nuclear Plant It Captured May Leak Waste Over Europe

Russia's Ministry of Defense has warned that the nuclear power plant it's currently occupying in southern Ukraine could suffer damage and result in an accident if shelling continues, CNBC reports.

The news comes after both Russia and Ukraine have accused each other of attacking the Zaporizhzhia nuclear power plant — the largest nuclear power plant on the continent. The bottom line, of course, is that there's be no fighting there at all if Russia hadn't invaded Ukraine this year.

Igor Kirillov, the head of Russia's radioactive, chemical and biological defense forces, told Reuters that the nuclear plant's backup support systems were damaged as a result of Ukraine's actions. According to Kirillov, an accident could cause radioactive material to cover Germany, Poland, and Slovakia.

Russian forces occupied the facility in March, holding Ukrainian employees at the site at gunpoint. The latest accusations and finger pointing serve as a dangerous escalation.

Ukrainian officials recently accused Russia of using the plant as "a shield," because Ukrainian forces wouldn't dare strike the facility.

"The Ukrainian Armed Forces know that these are Ukrainian personnel and this is a Ukrainian plant and there are Ukrainian people [there] so we aren't going to kill our people, our staff and damage our infrastructure," Petro Kotin, head of Energoatom, Ukraine's state enterprise in charge of operating the country's nuclear plants, told the BBC earlier this month.

It's a precarious situation. According to CNBC, while an accident can't technically result in the kind of meltdown that caused the Chernobyl disaster in 1986, the risks are still high. If containment walls were to be breached, radioactive material, including from spent fuel pools, could leak.

And that has the international community worried. Last week, officials from the International Atomic Energy Agency (IAEA), the United Nation's nuclear watchdog, said they were alarmed by Russia's bombing near the nuclear power plant.

"This is a serious hour, a grave hour and the IAEA must be allowed to conduct its mission to Zaporizhzhia as soon as possible," IAEA director general Rafael Mariano Grossi told the UN's Security Council last week, as quoted by Reuters.

Yet Russia maintains that Ukrainian forces are shelling the site themselves, potentially risking a catastrophe.

On Twitter, Ukrainian presidential adviser Mykhailo Podolyak pointed out an obvious solution: "You simply have to remove the UF from shops, demine buildings, release the workers, stop shelling from the [power plant complex] and leave the station."

Dr Hassan Murad School of Management

1: Two Blockchain Sleazebags May Have Crashed the Entire Crypto Market

The crypto market took over a decade, millions of both experienced and amateur investors, and a few super annoying Super Bowl ads to build. But according to a new report from New York Magazine, it may have taken just two of the skeeziest cryptbros around to bring the industry to its knees, both of whom are now believed to be on the run.

Who, you ask, might these lowlives be? Su Zhu and Kyle Davies, according to the accusations, the still-missing founders of imploded crypto hedge fund Three Arrow Capital (3AC), which filed for bankruptcy last month. The pair — who are believed to still be on the lam, sadly without their new, stupidly-titled megayacht — over-borrowed and over-promised, all the while sweeping insolvency under the rug. When the project finally collapsed, so did those who lent them millions and even billions of dollars — likely resulting in the market crash that caused a full trillion dollars to simply evaporate.

"I suspect they might be 80 percent of the total original contagion," Sam Bankman-Fried, CEO of crypto exchange FTX, told NY Mag, referring to Three Arrow's alleged responsibility for the broader market crash. "They weren't the only people who blew out, but they did it way bigger than anyone else did. And they had way more trust from the ecosystem prior to that."

As NY Mag details, 3AC's success was built on two of the flimsiest things around: social media influence and heavy borrowing. Zhu especially amassed a vast following on Twitter, where he would make wild claims about market "supercycles," urging crypto-happy followers to just keep buying — no matter what the market looked like at face value.

Really, though, the pair's outward facing bravado appears to have been a complete front. They were borrowing massive amounts of money from new investors — including $66 million from Zhu's wife — in order to pay old debts, and in retrospect, it seems quite clear that they very much knew their operation was actually insolvent. Which, well, is basically just a Ponzi scheme.

"The numbers they were reporting in May were very, very wrong," Lane Kasselman, chief business officer of Blockchain.com, told NY Mag. "We firmly believe they committed fraud. There's no other way to state it — that's fraud, they lied."

Blockchain.com, notably, lost $270 million in unpaid loans to 3AC, and his since laid off about a quarter of its staff. Among other casualties were crypto exchange Voyager, which has since gone bankrupt and swallowed all user funds, and Genesis Global Trading, which NY Mag says lent 3AC $2.8 billion — a sum that will likely never be paid back.

The duo have also been accused of borrowing money from organized crime operations, which may really be why they're now in hiding. Eep!

So far, liquidators have only been able to recover a paltry $40 million of 3AC's onetime billions. Still, even if all of the money in its portfolio was somehow recovered, those billions would hardly be enough to reverse the colossally destructive game of dominos that the firm's eruption caused — perhaps proving, once and for all, that the crypto market is less Wild West and more house of cards.

"They used to boast that they can borrow as much money as they want," an unnamed trader who knew the pair in Singapore told NY Mag. "This was all planned, man, from the way they established credibility to the way the fund was structured."

Neither Zhu nor Davies replied to NY Mag's request for comment, except for an automatic email reply from Davies that read "Please note I am out of office at this time."

School of Health Science

1: AI Allows Dead Woman to Talk to People Who Showed Up at Her Funeral

Marina Smith, a 87-year-old woman who passed away in June, was able to address the mourners at her own funeral in the UK — sort of, at least, thanks to the power of artificial intelligence.

The woman was able to surprise the guests at the funeral in the form of a "holographic conversational video experience," created by a startup called StoryFile.

The company was founded by Smith's LA-based son Stephen and was originally created to preserve the memories of Holocaust survivors.

StoryFile used 20 cameras to film the woman answering around 250 questions prior to her death. This data was then fed into a software tool that was able to virtually recreate her after she passed.

The illusion must have been pretty shocking to funeral goers. Stephen Smith was able to converse with the virtual representation of his mother in real time, and even gave attendants the opportunity to ask questions as well.

"Mum answered questions from grieving relatives after they had watched her cremation," Smith told The Telegraph.

"The extraordinary thing was that she answered their questions with new details and honesty," he added. "People feel emboldened when recording their data. Mourners might get a freer, truer version of their lost loved one."

She's not the only one to have been revived with the power of AI by StoryFile. A holographic representation of the former Screen Actors Guild president Ed Asner was able to answer questions from attendees at his own funeral earlier this year.

"Nothing could prepare me for what I was going to witness when I saw it," Matt Asner, the actor's son, told Axios last month.

Other attendees were "a little creeped out by it," Asner added, because it was "like having him in the room."

StoryFile's efforts are representative of a much larger push by Silicon Valley to bring back the dead with the power of machine learning. Earlier this year for instance, tech giant Amazon showed off a creepy new feature of its Alexa smart speaker involving a late grandmother's voice reading a bedtime story to a child.