

Still no flying cars, jetpacks, or capes but we're getting there

Spring Technology Update

Technology, that mighty engine of change, doesn't stop. It keeps chugging along day and night, constantly churning out new ideas and products. So for the next few issues, the *Portal's* turning away from the great issues of the day to catch up on fresh products and wild ideas that you may have missed.

Activity Trackers and Their Data

Devices that track one's health and activity have been embraced by health-conscious users despite their **inaccuracies** and whether or not that captured data is **worth much**. But the little wristbands have captured enough to provide real-world consequences.

There's no doubt that high-tech sensor rigs can produce medically valuable data. One recent **experiment** showed that they could detect the onset of a Lyme disease infection days before the wearer felt ill. **Fitbit** and similar devices are much simpler, but they record enough that **insurance companies** have begun to offer **real cash incentives** for their use. This makes sense, as encouraging healthy practices would keep customers' claims lower in the long run.

Not only that, but real-time monitoring could bring those **same benefits** of advanced medical telemetry to ordinary users. While there are plenty of efforts underway to explore the potential of such devices, the basic algorithms to accurately interpret that information, and a means of relaying it in a timely and useful way to customers have a long way to go.



Yet all that abundance of data could wind up **hurting users**. The problem is that the **Affordable Care Act** forbids denying coverage to people with pre-existing medical conditions. If that protection is removed by the Republican Congress, then that data could be seen as a means of **denying coverage** or increasing prices for as much as *half* the population.

Data can be dangerous in other ways. In 2012, San Francisco bicyclist Chris Bucchere ran a red light and killed a 71-year-old pedestrian. His Strava **tracker showed** that he was going 35 MPH and failed to slow down as he approached the intersection. A **similar fatal accident** in New York's Central Park in 2014 also involved the use of the **Strava app**, as did a one-man **fatal crash** in California in 2013. Critics claimed that the data display urged riders to unsafe speeds, and so the company has since **limited data sharing**.

People have also tried to falsify readouts for their own ends. Jane Seo, a food writer in New York, tried to **manipulate the data** from her **Garmin 235 tracker** during a half-marathon run in Florida. Her second-place win aroused suspicion, and investigation found that her bodily rhythms indicated she rode a bike rather than ran for part of the distance, and the timestamp was off, too. A photo showing the actual numbers on her tracker after the race was irrefutable, proving she'd also taken a shortcut as well.

Of course, privacy is also a huge concern. A **report** by a Canadian non-profit showed that of eight of the best-known trackers, seven had significant privacy issues involving their Bluetooth connections, theoretically allowing the wearers to be tracked for long periods from up to 10 meters away. Some devices did not even encrypt data. Only the **Apple Watch** passed all tests with flying colors.

Data from these devices has already proved useful to law enforcement. A woman in Pennsylvania in 2015 who claimed she was raped faced **false reporting charges** when her Fitbit contradicted her story. Yet, in Canada, **Fitbit data showed** that a woman injured in an accident in a personal injury case remained significantly less active years later.

Hopefully, trackers could add as much as **ten years** to one's life – but only if used properly.

Bot wars on Wikipedia

A **new study reports** that less than half of the personal attacks by Wikipedia's commenters on others are by anonymous trolls. Nearly a third are committed by registered users responsible for several edits a month, and 9% from just 34 "highly toxic" editors.

If this is somehow due to Wikipedia's culture, then it's catching. An **Oxford study** showed that simple editing web-bots, designed to build links on pages and perform basic housekeeping tasks, have been engaged in silent conflict with each other for years, constantly undoing each other's changes.

They found the most enduring clashes on pages about Arabic and people like Neils Bor and Arnold Schwarzenegger. Two conflicting bots made more than 3,700 changes in just two years, while others made at least a thousand changes on other pages.

There are significant cultural differences, too. The Portuguese edition saw the most bot-on-bot action, while the stoic Germans had the least. Even simple algorithms following different rules can interact in unpredictable ways when turned loose.

Google's anti-trolling AI defeated by typos

But not even artificial intelligence seems capable of outwitting deliberate human maliciousness. Google's **Jigsaw Perspective** is a smart interface for moderating online discussions, teaching itself to spot abuse in comments and prevent trolling. However, a **study** by the University of Washington showed that simple misspellings (like "iidiot") or misplaced punctuation (like "i.diot") was all it took to fool the app.

They could also trick it the other way with negatives. "Not an idiot" scored almost the same as "idiot." **Natural language** is hard. If AI is ever going to successfully deal with people, it will have to be smart enough to detect sarcasm, distinguish humor from insult, and even tell when people are lying. Perhaps teaching machines to deal with trolls is a good start.

A rose that grew circuitry inside

The Borg seem a little nearer these days with the news of the first "**e-Plants**" – electronic plants. Scientists were able to grow roses with electric circuits, including wires and capacitors, within their veins.

A cut rose was put in a vase with a special solution that used the plant's own natural circulation to spread the chemical which formed conductive chains. It may even be possible to store charges.

DNA as memory storage

More blurring of the lines between biology, chemistry, and computing is being done on a smaller level. DNA has been functioning as the library of living

organisms for billions of years, but researchers have begun to study how it could store digital data as well.

DNA has a higher potential information density than any hard drive, and scientists have actually encoded digital info. A **new technique** involving data compression allows a hundred-fold increase. For some unexplained reason, researchers have encoded a full OS, an 1895 French film, an Amazon gift card, a computer virus, the Pioneer plaque and a research paper.

"Go" for the new Space Race

NASA is **considering** putting a crew onboard an **Orion** capsule on the first test flight of its long-awaited **Space Launch System** next year, and sending it around the Moon. They're not the only ones.

After a long slump since the end of the Shuttle era, space is once again the place. Elon Musk's **Space X** has also promised to send two **space tourists** looping around the Moon in 2018. **Space Adventures** – which sent the first tourist to the International Space Station – is also planning a circumlunar expedition.

Meanwhile, while New Mexico patiently waits for Richard Branson's **Virgin Galactic** to use **Spaceport America** to fly tourists to the edge of space, the company has announced it, too, is getting into the **satellite launching** business. Not to be outdone, Musk's rival Jeff Bezos wants his **Blue Origin** to set up an "Amazon-like" **space delivery system** to the Moon.

This might be a good idea. With **China set to launch** its own space station next year, and Japan, India, and others in the mix, too, it's going to get busy up there.

NASA gives out free software

Why reinvent the rocket? One thing that these or any would-be space explorers might find handy is NASA's long-established expertise. The space agency is literally giving it away with the **free third edition** of their catalog of software, without any copyright or access fees. The key to their huge free **software library**, it's all pure rocket science from propulsion to life support, to business operations and management.

Mad scientists and DIY astronauts take note.



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