NEWS LETTER

ITECH COMMITTEE

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Do you know the Latest Trends in IT Sector?

You all read some or the other articles and post about recent trends during surfing, but do you really know what the current trends in IT sector are?

As we know Technology is evolving at such a rapid pace that annual prediction trends can seem out-of-date, even before they go live as a published blog post or article. Let us take a quick look at some of these Trends that are currently driving the IT sector.

1. **Artificial Intelligence** has already received a lot of buzz in recent years, but it continues to be a trend to watch because its effects on how we live, work, and play are only in the early stages. AI refers to computer systems built to mimic human intelligence and perform tasks such as recognition of images, speech or patterns, and decision making. AI can do these tasks faster and more accurately than humans.

We use AI services in one form or another every day, including navigation apps, streaming services, smartphone personal assistants, ride-sharing apps, home personal assistants, and smart home devices. In addition to consumer use, AI is used to schedule trains, assess business risk, predict maintenance, and improve energy efficiency, among many other money-saving tasks.

AI is one part of what we refer to broadly as automation, and automation is a hot topic because of potential job loss. Experts say automation will eliminate 73 million more jobs by 2030. However, automation is creating jobs as well as eliminating them. Jobs will be created in development, programming, testing, support, and maintenance, to name a few.

2. **Machine Learning** is a subset of AI. With Machine Learning, computers are programmed to learn to do something they are not programmed to do: they learn by discovering patterns and insights from data. In general, we have two types of learning, supervised and unsupervised.

While Machine Learning is a subset of AI, we also have subsets within the domain of Machine Learning, including neural networks, natural language processing (NLP), and deep learning.

Machine Learning is rapidly being deployed in all kinds of industries, creating a huge demand for skilled professionals. ML applications are used for data analytics, data mining, and pattern recognition. On the consumer end, Machine Learning powers web search results, real-time ads, and network intrusion detection, to name only a few of the many tasks it can do.

In addition to completing countless tasks on our behalf, it is generating jobs. Machine Learning jobs include engineers, developers, researchers, and data scientists.

3. Like AI and Machine Learning, **Robotic Process Automation (RPA),** is another technology that is automating jobs. RPA is the use of software to automate business processes such as interpreting applications, processing transactions, dealing with data, and even replying to emails. RPA automates repetitive tasks that people used to do. Up to 45 percent of the activities we do can be automated, including the work of financial managers, doctors, and CEOs.

Although Forrester Research estimates RPA automation will threaten the livelihood of 230 million or more knowledge workers or approximately 9 percent of the global workforce, RPA is also creating new jobs while altering existing jobs. McKinsey finds that less than 5 percent of occupations can be totally automated, but about 60 percent can be partially automated.

For an IT professional, RPA offers plenty of career opportunities, including developer, project manager, business analyst, solution architect, and consultant.

4. **Edge Computing**: Formerly a technology trend to watch, cloud computing has become mainstream, with major players AWS, Microsoft Azure and Google Cloud dominating the market. The adoption of cloud computing is still growing, as more and more businesses migrate to a cloud solution. But it's no longer the emerging technology.

As the quantity of data we're dealing with continues to increase, we've realized the shortcomings of cloud computing in some situations. Edge computing is designed to help solve some of those problems as a way to bypass the latency caused by cloud computing and getting data to a data center for processing. It can exist "on the edge," if you will, closer to where computing needs to happen. For this reason, edge computing can be used to process time-sensitive data in remote locations with limited or no connectivity to a centralized location. In those situations, edge computing can act like mini data centers. Edge computing will increase as the use of the Internet of Things (IoT) devices increases. By 2022, the global edge computing market is expected to reach $6.72 million. As with any growing market, this will create various jobs, primarily for software engineers.

5. **AR and VR:** Virtual Reality (VR) immerses the user in an environment while Augment Reality (AR) enhances their environment. Although VR has primarily been used for gaming thus far, it has also been used for training, as with VirtualShip, a simulation software used to train U.S. Navy, Army, and Coast Guard ship captains. The popular Pokemon Go is an example of AR.

Both VR and AR have enormous potential in training, entertainment, education, marketing, and even rehabilitation after an injury. Either could be used to train doctors to do surgery, offer museum-goers a deeper experience, enhance theme parks, or even enhance marketing, as with this Pepsi Max bus shelter.

There are major players in the VR market, like Google, Samsung, and Oculus, but plenty of startups are forming and they will be hiring, and the demand for professionals with VR and AR skills will only increase.

An Unlikely Coronavirus Hero? Self-Driving Cars When humans fall ill, it helps to have some robotic help

Transport, Vehicle, Car, Building, Minivan, Door, **NEOLIX**. Neolix, a Chinese self-driving delivery startup, is using its self-driving vans to deliver medical supplies in Wuhan, as well as to disinfect roadways. The company has received orders for 200 of its vans as demand surges.

As the benefits of these vans have become evident, the Chinese government said it's willing to subsidize up to 60 percent of the purchase price, according to Bloomberg.

Makers of autonomous vehicles have long been selling the benefits driver-free transportation. But it took a devastating global pandemic to provide a compelling, real-world example, A Chinese self-driving delivery company called Neolix has been deploying fleets of its self-driving vans to transport medical supplies and food to areas of the country hit hardest by COVID-19, including the epidemic's epicenter in Wuhan. The small vans even have the capacity to disinfect city streets which are now empty due to quarantine measures.

TECHNOLOGY AND COVID-19
How Your Old Laptop Can Fuel Coronavirus Research, The company has booked over 200 orders for its vans over the last two months. Before that, only 125 units had been produced since manufacturing began in May 2019.

After seeing how useful autonomous technologies can be in the midst of a global health crisis, the Chinese government has even offered up a pretty attractive incentive for companies that would like to purchase and operate delivery vans: 60 percent off of the price tag. With that in mind, Neolix expects to manufacture and sell 1,000 vans by the end of the year. While many self-driving vehicles are heavily restricted on busy roadways, Neolix's delivery vans can mostly navigate Chinese roads without battling the chaos of unpredictable motorists and pedestrians.

While the U.S. does not have sweeping federal laws pertaining to self-driving vehicles and operation on public streets, companies like Waymo, Uber, and Argo AI have close relationships with city and state level governments where testing is conducted in states like California, Arizona, Pennsylvania, and Florida, among others.

Microsoft Giving Robotic Process Automation More Attention

Near the end of May, Microsoft acquired Softomotive, a robotic process automation platform. With the acquisition, Softomotive's products will become part of Microsoft Power Automate, expanding that offering's low-code robotic process automation capabilities.

Founded in 2005, Softomotive has focused on business end users as the best way to process improvement and innovation. To that end, the company focuses on intuitive user interfaces meant to provide non-technical enterprise users with expanded automation capabilities.

Microsoft promoted the deal as one that further democratizes RPA and makes bot-enabled manual business process automation more widely accessible. The company's CEO, Satya Nadella, said during his Build keynote last month that the tech giant will double down on its Power Platform – to which RPA was added just a few months ago.

"We're in full agreement with Satya Nadella's keynote comments from Build that the future of automation will be better realized with software solutions that are both powerful and easy to use," said Terry Simpson, technical evangelist at Nintex.

Simpson pointed to Nintex's own offerings like Power Automate, which allows individual users to automate everything from simple tasks to advanced workflows. And the RPA market is expected to continue to grow quickly. Pegged at $680 million in 2018, tech analyst Gartner predicts that the RPA software market will get to $2.4 billion by 2022. Fortune Business Insights pegged the market at $6.81 billion by 2026, with some experts expecting COVID-19 to speed up that growth.

However, some in the industry say robotic process automation is overhyped. Deloitte's 2020 global RPA survey found that although the sector is growing quickly, only 3% of the organizations using RPA have managed to scale it beyond 50 bots. Research from Forrester found that just over half of organizations got past 10 bots.

"There's the saying 'if you're a hammer, everything looks like a nail,'" said Burley Kawasaki, the chief product officer at K2. "That's the situation with the 'RPA Hammer' right now."

Yes, sometimes you need a hammer, Kawasaki said – but sometimes you need a different tool, and knowing when that is the case is how problems get solved. But because RPA focuses on the parts of a process that are addressed with manual data entry, broader process considerations are left out, he said.

"The big thing organizations need to consider is being able to orchestrate complex processes from end-to-end," Kawasaki said. The problem there is that RPA is currently focused on automating individual tasks rather than connecting them into a process, he said.

"True intelligent automation/digital transformation needs something that can orchestrate all of the different pieces of a

complex process and can provide insights into all the various pieces and how they're working together," Kawasaki said.

The Boston Dynamics Robot Dog Got a Job on an Oil Rig

- Spot, the internet-famous Boston Dynamics robot dog, just landed its first job at a Norwegian oil and gas company.
- The robot will survey an oil and gas production vessel, according to Bloomberg.
- Since last September, Boston Dynamics has been making Spot available for commercial lease. This looks to be the second organization to take the robotics company up on the offer, after a bomb squad in Massachusetts

Spot the Dog the robotic viral sensation known for opening doors, climbing steps with ease, and even taking clean dishes out of the dishwasher—has just landed a full-time gig as an inspector at an oil and gas company in Norway. At some point this year, the Boston Dynamics robot will begin patrolling Aker BP's oil and gas production vessel at the field in the Norwegian Sea, Bloomberg reports. There, it will run inspections, look for hydrocarbon leaks, and put together reports based on the data it collects.

Aker BP, which is highly invested in digitizing the oil and gas industry, wants to use Spot to make offshore operations safer, the company said during a presentation of the robot in Oslo today. According to Bloomberg, Aker BP will run the tests with software controlled by its parent company.

The news: Spot, has one of its first real-world assignments: oil and gas firm Aker BP will start using it to patrol a rig in the scary field in the Norwegian Sea this year. The hope is that it will be able to autonomously inspect the rig and capture data on gas leaks and other issues, generating reports for anything that requires further investigation.

Risky business: It will also be tested on its ability to

perform work deemed high-risk for humans, and will be hooked up to telepresence operators onshore. "We believe robotics will help us operate more safely and with lower cost and emissions shortly, " a spokesman for Aker BP said.

Testing: Aker BP has an agreement with an AI software company called Cognito to work out which tasks it is best suited to, and then deploy it in the wild. They've already tested Spot in simulated environments.
The spot is not a house pet or a toy for entertainment, it's a four-legged robot that can walk up to three miles per hour, climb terrain, avoid obstacles, see 360-degrees, and perform several programmed tasks. Now, Spot is available to purchase from Boston Dynamics for $74,500.

DATA ANALYSIS RELATED TO COVID-19

Data Gathering: Gathering location data at the speed required to contain the pandemic is proving challenging, but web & mobile apps like Coronamadrid are allowing governments to manage the crisis more effectively with self-diagnosis mechanisms. By tracking symptoms, you can reduce the pressure on emergency hotlines & understand the pandemic from a spatio-temporal perspective with the data gathered.

Social Distancing Analysis: Many countries are using social distancing strategies to decrease the transmission of the virus before moving to full lockdowns. Using spatial data on human mobility, governments can see where measures are or aren't working using dashboards, as well as including critical POIs (hospitals, supermarkets, clinics) to understand patterns. These insights can also be used by the police for law
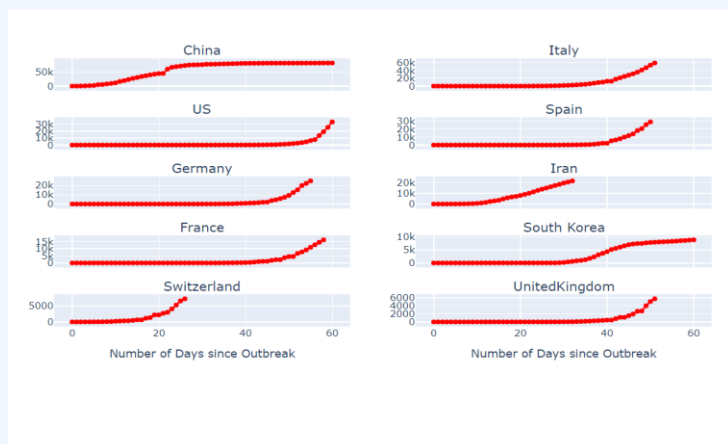
Overcrowding Analysis: With cities in lockdown, transport systems are experiencing a drop in demand & capacity. Alongside this there is a need for city authorities to provide essential services to health-care workers, first responders &

other essential personnel. Spatial analysis can be used to determine areas at risk from overcrowding to ensure efficient movement of these individuals.
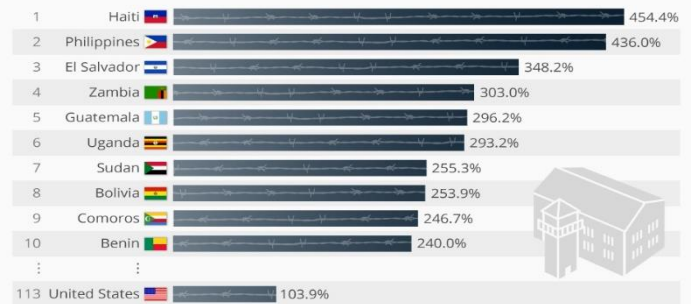
Supply Chain Optimization: Online retailers & their respective logistics providers are seeing unprecedented demand due to lockdown measures. Using route optimization for last-mile deliveries considering key constraints relating to your distribution centres, fleet, staff & customers is key in order to evolve your supply chain with the new consumer demands, in line with emergency regulation.
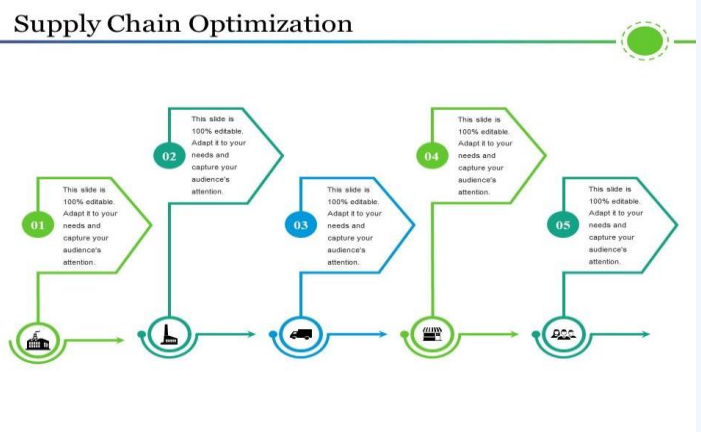
Data Visualization: Maps provide an intuitive & efficient way to inform clients & citizens of key data points relating to COVID-19, such as healthcare factors, school closures, social media sentiment, medical facility availability & much more. Using our platform users can rapidly build & publish data by connecting to a wide range of platforms, ensuring high-quality data is in the hands of decision-makers faster.
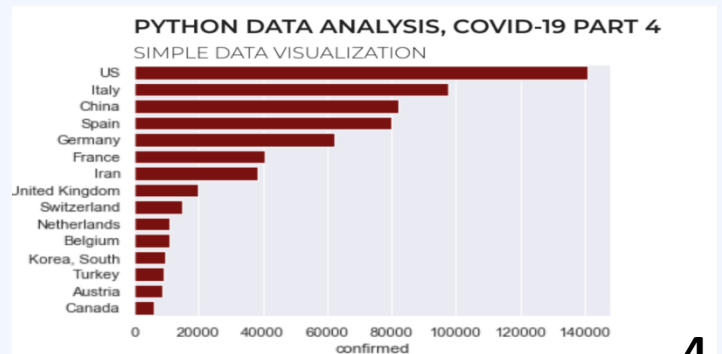
Sentiment Analysis: During the pandemic & confinement, social media behaviour has changed considerably. Geosocial data & analysis can provide institutions & organizations with insights to understand & react to how the COVID-19 spread is affecting consumer & citizen behaviour leveraging anonymized & aggregated location-based social media data.

Need Data Science support?

Struggling to find the resource to move fast enough? Our Professional Services team is ready to support your organization through this challenging period. With extensive experience in Spatial Data Science, Web & Mobile App Development & UX - they are already working with several governments & private sector organizations to analyse data relating to the pandemic.

Need Data Streams?

Finding data under pressure, against the clock can be challenging. We're doing our best to take the pain away from selecting, collecting, & consuming spatial data with our Data Observatory, providing relevant data to enhance your analysis.

Suction Cups Suck
This Wall-Climbing Robot Could Make Them Better

Researchers from Zhejiang University in China have created a new kind of vacuum suction unit to help wall-climbing robots traverse over any kind of surface.

To build robots that can better adhere to challenging facades, then, researchers from Zhejiang University in Hangzhou, China have re-imagined the suction cups these bots use to grip to
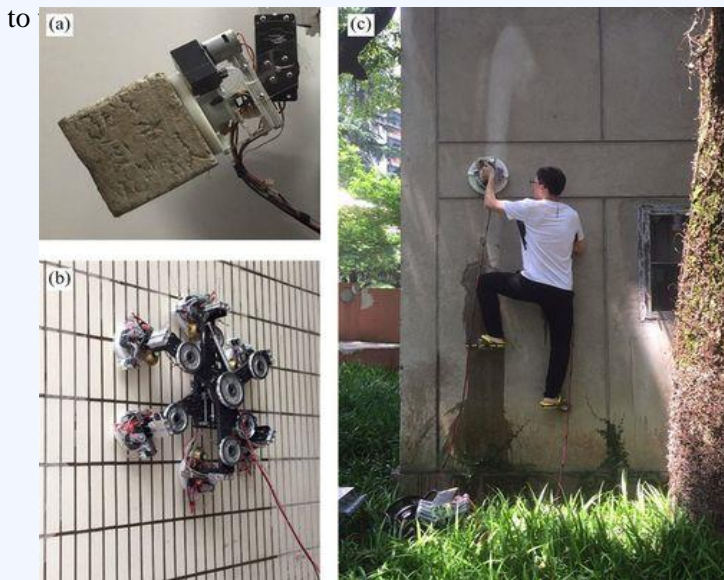
When a suction cup sticks to a rough surface rather than a smooth one, it leaves gaps that a sealing ring alone can't close tightly enough, say Kaige Shi and Xin Li, the researchers behind the new study, which was published in Physics of Fluids. Air can then escape from the outside environment into the vacuum zone, changing the pressure inside and decreasing the vacuum seal until it's completely destroyed.

Shi and Li took that concept and built a robot that could climb even rough, unfinished exterior walls of buildings. Using water and the basics of centrifugal force, the scientists were able to overcome any leakage by creating a high-speed, rotating ring of water that could maintain the vacuum, despite surface restrictions.

Exactly how practical is it for wall-climbing robots to use water this way? The jury is still out. After all, imagine if the robot ran out of water supply while cleaning the 60th floor of a high-rise. But in the meantime, this idea of extending the suction cup's vacuum ability is a clever approach.
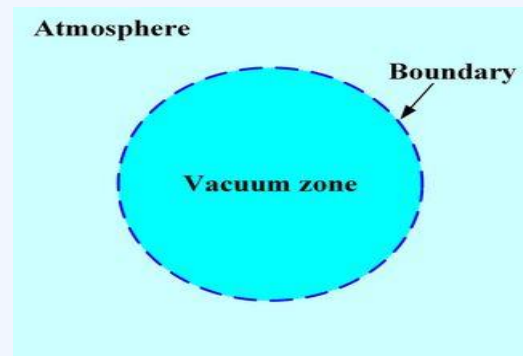
In the figure , vacuum leakage is determined by the air flow from the atmosphere to the vacuum zone, driven by pressure differences at the boundary, which is illustrated with a broken line.

For vacuum leakage to occur, two conditions must be satisfied:
- There must be a flow path connecting the atmosphere and vacuum zone (basically a break in the seal).
- A pressure difference must exist at the boundary of the vacuum zone.

While scientists have certainly created better seals that can slightly deform to close the gaps between the sealing ring and the rough surface, that only marginally helps. When the surface you're working on gets rougher and rougher, the gaps in the seal become larger, and the flow resistance of those gaps becomes smaller. That means the flow rate of the outside atmosphere increases and eventually destroys the vacuum chamber.

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