BYTE QUEST

Vasavi College Of Engineering

Department Of Computer Science and Engineering

October 15, 2017

Volume 45

Contents:

Byte Quest is the article published by the CSE dept of Vasavi College of Engineering regarding the latest innovative Technologies and Software that have been emerged in the competitive world. The motto of this article is to update the people regarding the improvement in technology. The article is designed by the active participation of students under the guidance of faculty coordinators.

- Good ,bad or indifferent if you are not investing in new technology , you are going to be left behind.

  -Philip Green

- Once a new technology rolls over you, if you're not part of the steamroller, you're part of the road.

  -Stewart Brand.

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AI-POWERED ROBOT MICROSCOPES WILL HELP CLEAN UP THE WORLD'S WATER SUPPLIES

Water shortage is a problem that could affect up to a quarter of the world's population by 2025. The behavior of microscopic plankton can give vital clues on everything from chemical pollution levels to temperature change. Autonomous, robotic cameras developed by IBM and powered by AI have the potential to monitor this behavior in more detail than has been possible before. Data from the cameras can be analyzed to give real-time insights into factors affecting water quality and life in our lakes and oceans.Ahead of today's release, Jeff Welser, vice president and lab director at IBM Research told me "So with internet of things (IoT) we talk about putting sensors everywhere – and this is an example of just how far we can take this, when we combine it with AI.

"We know people are going to have all kinds of problems with clean water in the future, and we know there are micro-organisms in water, that if we can get them to tell us what's happening that would be a really great way to understand any potential problems."

Making the devices as low-powered as possible is essential, in order to be able to deploy them at scale. To this end, they don't contain lenses or focus mechanisms or other complicated mechanical parts, but simply track shadows and movements through light sensors.

APARNA (CSE-B 2/4)

CRYPTO ARTICLES AND BLOCK CHAINS TO FIGHT COUNTERFEITER

Nobody likes knockoffs – blockchain and crypto-anchors will help tO crack down on counterfeiting as well as ensure security in the food supply chain. With $600 billion a year lost to the global economy through fraud and counterfeiting, blockchain offers the potential to ensure the provenance of everything from food to diamonds and life-saving medicines. In a global economy, goods pass through many different sets of hands between their point of production and the end consumer. This leaves them open to tampering and theft problems which blockchain technology could help to eliminate.

In order to work, however, there needs to be a tamper-proof link between the physical products and the digital records on the blockchain. This is where crypto-anchors come in – microscopic codes or identifiers which can serve as "digital fingerprints" to ensure security at every stage of the journey. "The challenge here is that the blockchain can record all the transactions but somewhere you've got to link the transactions to the actual physical object itself – so that you know the banana that got scanned is the actual banana that got to you," Welser tells me.

A.DIVYA (CSE-B 2/4)

LATTICE CRYPTOGRAPHY WILL DISCOURAGE EVEN QUANTUM POWERED HACKERS

Complex algebraic structures called lattices will become a valuable tool in the age of quantum computers. With more and more sensitive data being collected and stored online, security measures will need to keep pace with the growing capability of hackers, as virtually unlimited amounts of computing power become cheaper and more available.

Until now ever-more complex cryptography – from 64-bit encryption to 128 bit and 256 bit – has been the standard response to the increasing amount of CPU power available to hackers. As quantum computing becomes mainstream, this will no longer be enough.

"The reality is there's constantly a battle on with cybersecurity, we need to make sure we continue to have cryptography and encryption that can keep the bad guys out, and all of that relies on the fact that the maths is so hard to do that trying to solve it with a computer takes an unreasonable amount of time," Welser says.

"We have to make sure that as computers get faster, we can continue to keep ahead of them. In particular, this is a concern with the quantum computers that are coming up."

Lattice cryptography involves encoding data within high-dimensional algebraic structures which even theoretical million-qubit quantum computers will find tough to crack. It also opens up the possibility of Fully Homomorphic Encryption (FHE), which will enable computers to operate on data while it is still in an encrypted state – eliminating the security flaw inherent in existing systems whereby data has to be decrypted (and thus made vulnerable to hackers) in order to be processed. This could, for example, mean credit reference systems which can make credit scoring decisions without personal data ever being exposed.

CH. DIVYA (CSE-B 2/4)