BYTE QUEST

Vasavi College Of Engineering

Department Of Computer Science and Engineering

July 15, 2016

Volume 23

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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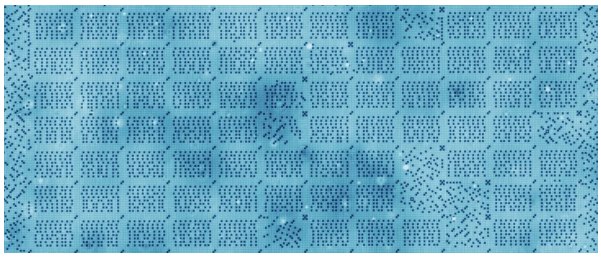
WRITING DATA ONE ATOM AT A TIME FOR EFFICIENT STORAGE

Scientists in the Netherlands have succeeded in writing data at the smallest scale ever, manipulating chlorine atoms one at a time to store a kilobyte of data.

The tool used to create this mechanism is a scanning tunnelling microscope (STM) which enables scientists to image and manipulate material at the atomic level.

This can be compared to a sliding puzzle where every bit consists of two positions on a surface of copper atoms, and one chlorine atom that we can slide back and forth between these two positions. If the chlorine atom is in the top position, there is a hole beneath it – we call this a 1. If the hole is in the top position and the chlorine atom is therefore on the bottom, then the bit is a 0.

Because of its reduced scale, it could help in storage efficiency, but due to the coldness



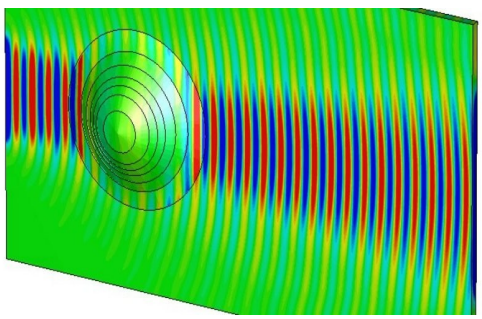
requirements for the memory to function, it may still be a while yet before your Spotify or Netflix streams to you courtesy of chlorine. In its current form the memory can operate only in very clean vacuum conditions and at liquid nitrogen temperature, so the actual storage of data on an atomic scale is still some way off. But through this achievement they have certainly come a big step closer.

K.SOWMYA(CSE-A 2/4)

RESEARCHERS ARE A STEP CLOSER TO MAKE A REAL-LIFE INVISIBILITY CLOAK

Researchers from the UK have successfully made a raised object appear flat to electromagnetic waves i.e., a full-blown cloaking device that can hide objects.

The team covered a raised surface with a newly developed 'nanocomposite medium' which allows electromagnetic waves to hit the object and pass through without scattering, therefore, cloaking it.

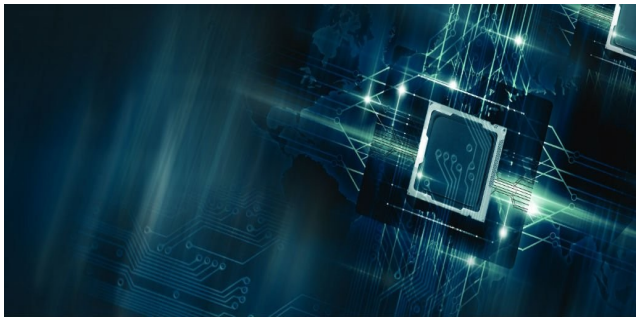


Despite the fact that researchers are still far away from a true cloaking device, the team is super excited about the new material because it expands previous 'invisibility cloak' studies that found similar techniques worked with only one frequency.

Researchers in New York created a lens that incorporates four different lenses with different focal lengths that basically bends light, giving the impression that an object has disappeared. Many approached to cloaking with a basic idea to take light and have it pass around something as if it isn't there, often using high-tech or exotic materials.

RAMYA(CSE-B 3/4)

WAY TO BUILD CIRCUITS FOR THE WORLD'S FIRST QUANTUM COMPUTERS



Scientists are now scrambling to build the first viable quantum computer - a machine that could increase processing speeds 100-million-fold and a team of engineers in the US say they might finally have a solution.

Since, Quantum computers are not limited to the 1s and 0s of binary code, they revolutionise the way data is processed. Instead, quantum computers use qubits, which can essentially take the state of 0, 1, or a 'superposition' of the two.

Quantum computers can perform many calculations simultaneously, giving them - quite literally - limitless potential because of its three unusual features.

Quantum entanglement is a strange phenomenon where two quantum particles interact in such a way that they become deeply linked, and essentially 'share' an existence. This means that what happens to one particle will directly and instantaneously affect the other - even if it's many light-years away. Getting a bunch of entangled particles in the one place is crucial to the development of quantum computers.

First they used beams of laser light to build a 3D lattice array, which could trap and hold onto a bunch of quantum particles, forcing them into a cubic arrangement of five stacked planes. Think of it like a five-layer sandwich with grids of atoms held inside each layer where every layer could hold 25 equally spaced atoms and once in position, microwaves are used to switch individual qubits from one quantum state to another without altering the states of the other atoms in the cubic array.

When the scientists then bathed the whole array with a uniform wash of microwaves, the state of the atoms with the shifted energy levels changed, while the states of all the other atoms did not. The team, led by physicist David S. Weiss, tested their ability to change the quantum state of these individual atoms by switching the states of selected atoms across three of the stacked planes to spell out the letters P, S, and U.

The two major limitations are the system needs to be seriously scaled up, because 125 atoms aren't going to do us much good in the real world, and the quantum particles used in the system hadn't been entangled. But Weiss's team is confident that they can build on the system they have, both in teams of scale and spooky entanglement action.

PRAMOD(CSE-B 2/4)