



RECENT UPDATES ON TECHNOLOGY

Prepared By S2 Students under the Guidance Of DSH (Department Of Science and Humanities)

UNBREAKABLE INVISIBLE INK FOR SECURE PAPER RECORDS



To protect written records an uncrackable combination of invisible ink and artificial intelligence has been used by some researchers. Coded messages in invisible ink might sound like something from a spy novel, but they can have important security purposes in real life. Even as electronic records advance, paper is still a common way to preserve data because of cyber-warfare hacking of computer systems. Researchers have now developed and printed complex encoded data with normal ink and a carbon nanoparticle-based invisible ink that requires both UV light and a computer that has been taught the code in order to reveal the correct hidden message. The ink was prepared by dissolving carbon nanoparticles in water, which has a high quantum yield and outstanding light stability and salt stability, thus ensuring the integrity of information in complex environments. Carbon nanoparticles, which have low toxicity, can be essentially invisible under ambient lighting, but can create vibrant images when exposed to ultraviolet (UV) light - a modern take on invisible ink. In addition, advances in artificial intelligence (AI) models can ensure that messages are only decipherable on properly trained computers. This smart strategy could provide new opportunities for high-level paper information encryption and also proposes new ideas for the applications of carbon nanoparticles and artificial intelligence.

For more details: <https://eandt.theiet.org/content/articles/2021/05/unbreakable-invisible-ink-encryption-could-help-secure-paper-records/>

ASWIN MANOJ, S2 CE

SWEAT SENSOR MONITORS BLOOD GLUCOSE WITHOUT PRICK TEST



Researchers have developed a device that can measure glucose in sweat with the touch of a fingertip, a less painful alternative to finger pricks. Many people with diabetes endure multiple, painful finger pricks each day to measure their blood glucose. To prevent this, the device takes readings from a person's sweat with the touch of a fingertip, and then a personalized algorithm provides an accurate estimate of blood glucose levels. Although self-monitoring of blood glucose is a critical part of diabetes management, the pain and inconvenience caused by finger prick blood sampling can keep people from testing as often as they should. Scientists have developed ways to measure glucose in sweat, but because levels of sugar are much lower than in blood, they can vary with a person's sweat rate and skin properties. As a result, the glucose level in sweat usually doesn't accurately reflect the value in blood. So to obtain a more reliable estimate of blood sugar from sweat, researchers have to devise a system that could collect sweat from a fingertip, measure glucose, and then correct for individual variability.

For more details: <https://eandt.theiet.org/content/articles/2021/05/sweat-sensor-monitors-blood-glucose-without-prick-test/>

MOHANNED DHANISH M, S2 EEE

GERMANY TO BUILD FIRST QUANTUM COMPUTERS

The German government is going to spend billions of euros to support the development of the first Quantum Computer and related technologies. Quantum computers will soon be able to tackle certain types of problems those involving a daunting number of variables and potential outcomes, like simulating drug interactions or optimizing supply chain logistics much faster than any classical computer. It is well suited for tasks like optimization problems, data analysis and simulations. Classical computers manipulate ones and zeroes to crunch through operations, but quantum computers use quantum bits or qubits. Just like classical computers, quantum computers use ones and zeros, but qubits have a third state called "superposition" that allows them to represent a one or a zero at the same time. Fault tolerant quantum computers will do some things better than classical computers can.

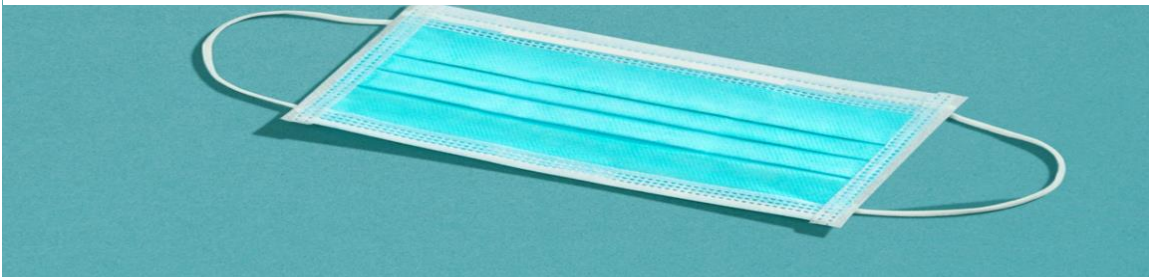
For more details: <https://www.reuters.com/article/us-germanyquantumcomputer-iduskbn2cs0w9>

ALAN JOHN VARGHESE, S2 CE

CARTOON CORNER



DISPOSABLE MASKS LEAK POLLUTANTS IN WATER

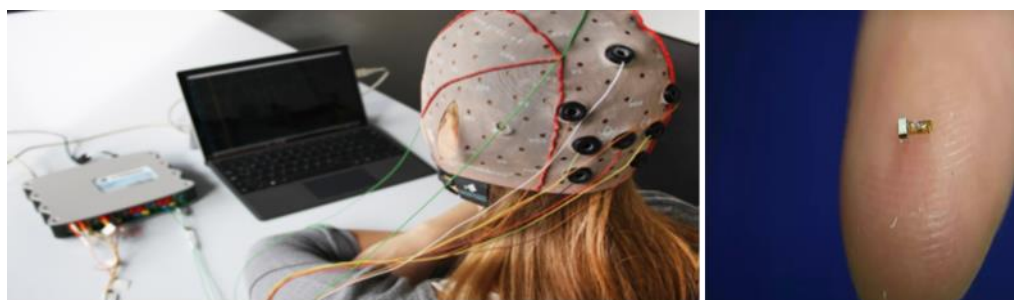


Nowadays the use of mask is tremendous in all over the world. Welsh study identified that many potentially dangerous chemical pollutants are released from facemasks when submerged in water. Researchers from Swansea University College of Engineering Researchers have identified the traces of Lead, Antimony and Copper which are high level pollutants within the fibers of ordinary disposable face masks. These types of masks are used during this corona virus pandemic situation by most of the people. But disposal of such masks are found to be polluting the entire world. The Sweden University is studying and exploring the level of toxic present and the characteristics of such masks. It is our requisite that no other pandemic situations arise due to this harmful pollutants. There is an urge to prevent the pollution caused due to the mask by the scientific community. We need to understand the impact of silicon and plastic microfiber particles on public health, particularly given that they can become easily detached from the masks and leached into water with no agitation, implying that they are mechanically unstable.

For more details: <https://eandt.theiet.org/content/articles/2021/05/disposable-masks-leak-microplastics-and-other-pollutants-in-water/>

BINSILA P V, S2 ECE

BCI – THE BRAIN-COMPUTER INTERFACES



In 2025, a wide variety of applications will use brain signals as an important source of information. BCI technology allows a human brain and an external device to talk to one another to exchange signals. It gives humans the ability to directly control machines, without the physical constraints of the body. Non-invasive tools often use sensors applied on or near the head to track and record brain activity. These tools can be placed and removed easily, but their signals may be muffled and imprecise. Invasive BCI would require surgery. Electronic devices would need to be implanted beneath the skull, directly into the brain, to target specific sets of neurons. BCI implants currently under development are tiny and can engage up to a million neurons at once. A research team at the University of California, Berkeley has created implantable sensors that are roughly the size of a grain of sand. They call these sensors “neural dust”. Invasive methods would likely result in a much clearer and more accurate signal between the brain and the device. But as with any surgery, the procedures required to implant them would come with health risks. Most BCI are still in the early stages of development and are actively being researched. Advanced BCI technology could be used to reduce pain or even regulate emotions. The brain-computer interface can be used to either analyse or produce such neural electrical signals, in order to diagnose or treat neuropsychiatric conditions. Wireless brain sensors are devices that are capable of detecting the pressure inside the brain, brain temperature, pH and brain activity in the form of ‘brain waves’ reflect the electrical transmission within the brain.

For more details:

<https://www.rand.org/blog/articles/2020/08/brain-computer-interfaces-are-coming-will-we-be-ready.html#:~:text=BCI%20technology%20allows%20a%20human,physical%20constraints%20of%20the%20body.>

AMRA FATHIMA M, S2 CSE

MACHINE LEARNING TO PREDICT OUTCOME OF COVID-19 PATIENTS.

A machine learning algorithm has been developed that can detect which patients with Covid-19 might get worse and not respond positively to being turned onto their front in intensive care units. This technique known as proning is being used to improve oxygenation of the lungs, but unfortunately not suitable for all patients. The system could be used to improve guidelines in clinical practice going forward and could be applied to potential future waves of the pandemic and other diseases treated in similar clinical settings. This dynamic understanding is vitally important when trying to understand a new life threatening disease and to know when and in whom each intervention works. The prone position is used in ICUs to help improve blood oxygenation in people with severe acute respiratory distress syndrome and has been used extensively during the pandemic. However, proning did not help all Covid-19 patients who will not benefit can delay the part of other treatments. The findings show that the AI model identified factors that determined which patients were likely to get worse and not respond to interventions like proning. In November 2020 a group of researchers developed an AI that can detect signs of Covid-19 by looking at x-ray images of patient’s lungs.

For more details:

<https://eandt.theiet.org/content/articles/2021/05/machine-learning-used-to-predict-outcome-of-covid-19-patients/>

PRANAV MOHAN, S2 CIVIL

TECH PUZZLE

READ THE CLUE AND FIND THE WORD

1. A mechanical device used to mix.
2. A device used to measure inside or outside dimensions.
3. Transfer of molten metal from furnace to ladle, ladle to ladle.
4. The purest form of china clay consisting of silicate of aluminium.
5. Network of cast iron used to support the cope when no cope flask is used.
6. A ----- is an arrangement and organization of interrelated elements in a material object or system.

H	Y	K	A	O	L	I	N	T	A
M	S	S	Q	L	G	J	E	A	B
O	W	T	N	Q	B	P	S	G	T
K	G	C	R	V	O	G	X	I	K
C	P	C	L	U	R	N	D	T	I
C	T	X	R	A	C	O	D	A	J
X	Y	I	I	P	H	T	E	T	M
D	N	S	G	M	B	T	U	O	V
G	C	A	L	L	I	P	E	R	W
T	X	Q	S	E	R	D	F	Q	E

Prepared BY ABHIJITH K S, S2 EEE

Mail your answers to: sandhvedavyasa@gmail.com