



## NEWSLETTER

# STIMULUS

### VISION

To be a centre of excellence in carving young aspirants to acquire state-of-the-art knowledge and skills in Computer Engineering for the development of society.



### MISSION

M1: To develop and improve an academic environment conducive to teaching and learning.

M2: To enrich the creative abilities of the students for enhancing the competence in problem solving and tackling challenges.

M3: To facilitate better interactions among the industry, the academia and the society to absorb and practise state-of-the-art technologies.

M4: To prepare students for responsible engagement in sustainable societal activities and lifelong learning.



## DNA nanobots can exponentially self-replicate

Tiny machines made from strands of DNA can build copies of themselves, leading to exponential replication.



Nanoscale “robots” made of DNA that rapidly self-replicate could be harnessed to manufacture drugs or other chemicals inside the body, say researchers.

Feng Zhou at New York University and his colleagues created the tiny machines, which are just 100 nanometres across, using four strands of DNA. The nanorobots are held in a solution with these DNA-strand raw materials, which they arrange into copies of themselves one at a time by using their own structure as a scaffold. The team didn't respond to a request for comment, but say in their paper that their nanobots are capable of exponential reproduction.

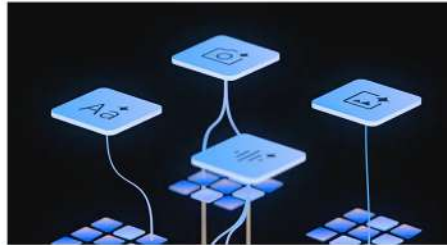
Andrew Surman at King's College London, who wasn't involved in the research, says that the nanobots are a step forward in creating machines from DNA that could manufacture drugs or chemicals, or even act as rudimentary robots or computers. Previous work has been limited to 2D shapes, which then have to be folded into 3D shapes – a process which comes with the chance of error. The new work allows 3D structures to be built from scratch.

“Assembling these kinds of things is tricky,” says Surman. “And how things are folded up, both in synthetic things that we make and in biomolecules, is really important. When things are folded wrong they don't work.”

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THE ECONOMIC TIMES

## Google says its Gemini AI outperforms both GPT-4 and expert humans



Three versions of Gemini have been created for different applications, called Nano, Pro and Ultra, which increase in size and capability. Google declined to answer questions on the size of Pro and Ultra, the number of parameters they include or the scale or source of their training data. But its smallest version, Nano, which is designed to run locally on smartphones, is actually two models: one for slower phones that has 1.8 billion parameters and one for more powerful devices that has 3.25 billion parameters. Comparing the capabilities of AI models is an inexact science, but GPT-4 is rumoured to include up to 1.7 trillion parameters and Meta's LLAMA-2 has 70 billion.

## The roboticist who wants to bring AI into contact with the real world



WHO'S in charge, your brain or your body? The answer may seem obvious, but there is plenty of evidence to suggest that our physiology has dramatically affected the way we think. This idea of embodied cognition could hold important lessons for those trying to build genuinely intelligent machines – artificial intelligences that learn and think and can generalise their knowledge to all manner of tasks, like humans.

Josh Bongard, a roboticist at the University of Vermont, is among those who insist AIs will only fulfil their promise if they can directly experience and interact with the physical world. That is a far cry from AIs like ChatGPT, whose only interactions with the world come via the abstract medium of language. But the field of embodied AI is pushing for the convergence of artificial intelligence and robotics, and Bongard is at its forefront.

## China's first underwater data centre is being installed



An underwater data centre that harnesses the ocean's natural cooling capability is taking shape near China's Hainan Island in the South China Sea. Keeping computers cool can slash power usage and carbon emissions, and this project could pave the way for putting supercomputers and data farms underwater.

## IBM's 'Condor' quantum computer has more than 1000 qubits



Today, IBM unveiled two new quantum computers. The bigger of the two, dubbed Condor, is the second ever to have a total number of quantum bits, or qubits, in the quadruple digits. IBM's other new quantum computer is called Heron, and it is the company's least error-prone device to date.

Researchers disagree on how to best build a quantum computer, but there is broad consensus...

## GPT-4 developer tool can be exploited for misuse with no easy fix



OpenAI's developer tool for its GPT-4 large language model can be misused to trick the AI into providing information to aid would-be terrorists, and fixing the problem won't be easy



## A single bitcoin transaction uses enough water to fill a swimming pool



Buying or selling bitcoin uses 16,000 litres of clean water for every single transaction, which could exacerbate existing droughts around the world. While the energy consumption and carbon emissions produced by bitcoin and other cryptocurrencies have been well studied, this is the first assessment of its water use and wider environmental impact.

Alex de Vries at the VU Amsterdam School of Business and Economics in the Netherlands has calculated that mining – the computational process that secures the bitcoin network – uses between 8.6 and 35.1 billion litres of water per year in the US alone. He says that bitcoin used 1.6 trillion litres of water globally in 2021, and expects this to rise to 2.3 trillion litres this year. Broken down per transaction, that means a single bitcoin trade consumes 16,000 litres of water – enough to fill a small swimming pool. This is “increasingly hard to defend”, says de Vries.

## Robots with squidgy paws could navigate uneven terrain



Robots could negotiate awkward terrain surefootedly thanks to squidgy paws containing cameras.

Tejal Barnwal at the Indian Institute of Technology Bombay, Jørgen Anker Olsen at the Norwegian University of Science and Technology and their colleagues have developed what they call a Terrain Recognition and Contact Force Estimation Paw (TRACEPaw).

## DO YOU KNOW ?



**Amazon’s Alexa listens to your conversations.**



**Your Apple product’s warranty may be void if you smoke near it.**



**King’s Field is the world’s first PlayStation game.**

## EDITORIAL



ATHUL KRISHNAN AS (SS)



KESAV GOPIN (SS)



ADARSH A JAY (SS)

# ACTIVITIES

## FUN RIDDLES

**I have keys but do not lock. I have space but have no room. You can enter but not come in.**

**What am I? :- 'KEYBOARD'**

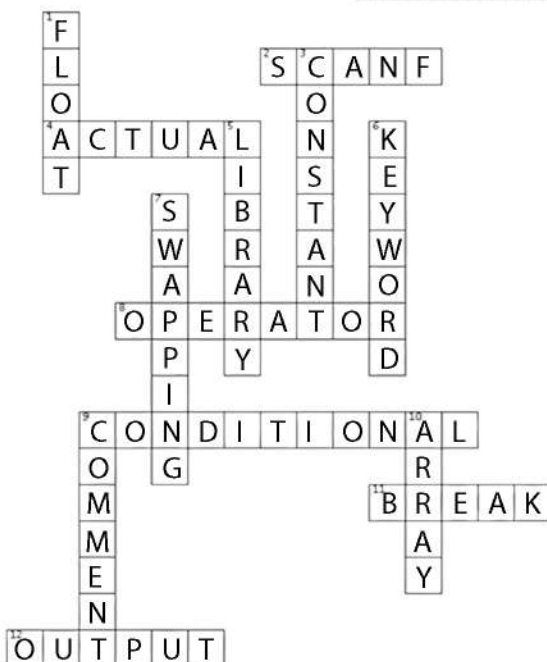


**Why couldn't the elephant use the computer?**

**He was afraid of the mouse!**



## CROSSWORD ANSWERS



### ACROSS

2. function used to input values using keyboard
4. parameters that appear in function call
8. used to operate operation
9. \_\_\_operator is a combination of ? And :, and it takes 3 operands
11. \_\_\_statement is encountered in a loop ,the loop immediately existed
12. printf is a \_\_\_function

### DOWN

1. keyword used for floating point numbers
3. \_\_\_in C refer to fixed value that does not change value during the execution
5. functions are not required to written by us
6. having fixed meaning and these meanings cannot be changed
7. The process of interchanging the values of two variables
9. The line begins with /\* and ends with \*/
10. fixed sized sequenced collection of elements having same data type