

Studying the Big Bang with AI

Artificial intelligence is being used for many extremely complex tasks. So why not use machine learning to study particle physics? As it turns out, this is not easy, because of some special mathematical properties of particle physics. But now, a neural network has been developed that can be used to study quark-gluon plasma - the state of the universe after the Big Bang.

Such processes can only be studied using high-performance computers and highly complex computer simulations whose results are difficult to evaluate. Therefore, using artificial intelligence or machine learning for this purpose seems like an obvious idea. Ordinary machine-learning algorithms, however, are not suitable for this task. The mathematical properties of particle physics require a very special structure of neural networks. At TU Wien (Vienna), it has now been shown how neural networks can be successfully used for these challenging tasks in particle physics

Tiny robotic crab is smallest-ever remote-controlled walking robot

Engineers have developed the smallest-ever remote-controlled walking robot -- and it comes in the form of a tiny, adorable peekytoe crab. Just a half-millimeter wide, the tiny crabs can bend, twist, crawl, walk, turn and even jump. Although the research is exploratory at this point, the researchers believe their technology might bring the field closer to realizing micro-sized robots that can perform practical tasks inside tightly confined spaces.

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For contributing matter to this newsletter, mail your articles/submissions to [jyothi.pillai@bidurg.ac.in](mailto: jyothi.pillai@bidurg.ac.in) or contact student editor on +91-9753431695
You can help us in making the newsletter even better!

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With a perfect blend of ingenuity and contraption, we present to you the next edition of 'i-CREATE', an embodiment of cutting-edge technologies and astounding facts.

Information Technology is an ever-expanding field and the power of what technology holds today is definitely beyond one's imagination, rendering a dazzling set of ideas. In this issue of i-Create, we celebrate these ideas.

"In some ways, programming is like painting. You start with a blank canvas and certain basic raw materials. You use a combination of science, art, and craft to determine what to do with them." - Andrew Hunt

VISION AND MISSION OF THE DEPARTMENT

Vision

To produce efficient, skilled IT engineers and entrepreneurs, contributing to research and development of the nation.

Mission

To attain academic excellence and entrepreneurship skills through exposure to real-time projects and research activities by experienced faculty and good infrastructure.

1. To attain academic excellence for fulfilling local and global changing needs through student-centric learning methodologies.
2. Exposure of students to real-time projects and research activities through industry-institute interaction
3. To develop entrepreneurship skills and ethical values

Q: What do cats and developers have in common?

A: When either one is unusually happy and excited, an appropriate question would be, "did you find a bug?"

HINT:

Across:

5. Program that runs when translated by Java computer
7. Program that runs in context of a browser
8. Error in the rules that govern structure of language
9. Used to describe complete data processing system with flow of data
10. Set of bits, generally consists of 8 bits
11. Sequence of instructions suitable for processing by PC

Down:

1. HW/SW/both that allow user to interact & perform operation on system
2. Rules that govern structure of language statements
3. Program that translates a program into machine code that can be converted to executable code
4. Ordered set of well-defined instruction for solution
5. Binary digit, smallest digit of information for solution

<https://www.hackerrank.com>

HackerRank provides challenges for several different domains such as Algorithms, Mathematics, SQL, Functional Programming, AI, and more. You can solve all the challenges directly online.

They provide a discussion and leaderboard for every challenge, and most challenges come with an editorial that explains more about the challenge and how to approach it to come up with a solution.

<https://www.codechef.com>

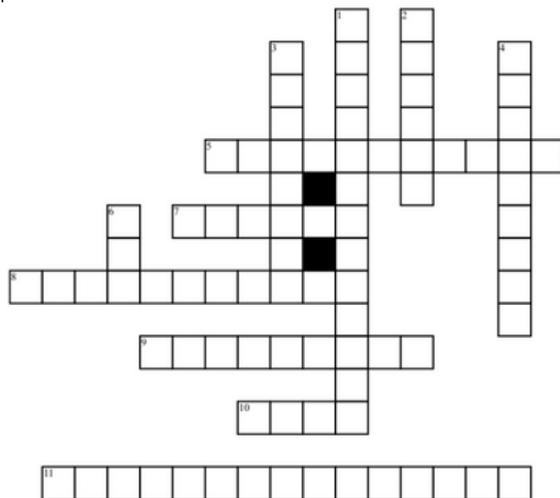
CodeChef is an Indian-based competitive programming website that provides hundreds of challenges. You are able to write code in their online editor and view a collections of challenges that are separated into different categories depending on your skill level (check out this example). They have a large community of coders that contribute to the forums, write tutorials, and take part in CodeChef's coding competitions.

<https://leetcode.com>

LeetCode is a popular Online Judge that provides a list of 190+ challenges that can help you prepare for technical job interviews. You can solve the challenges directly online in one of 9 programming languages. You are not able to view other users' solutions, but you are provided statistics for your own solutions such as how fast your code ran when compared to other users' code. They also have a Mock Interview section that is specifically for job interview preparation, they host their own coding contests, and they have a section for articles to help you better understand certain problems.

Crossword

i-Create presents a Crossword puzzle. All the hints are given which are based on programming knowledge. Thus, the Crossword is a challenging logic puzzle that can be solved.



Using everyday WiFi to help robots see and navigate better indoors

Engineers at the University of California San Diego have developed a low-cost, low-power technology to help robots accurately map their way indoors, even in poor lighting and without recognizable landmarks or features.

The technology consists of sensors that use WiFi signals to help the robot map where it's going. It's a new approach to indoor robot navigation. Most systems rely on optical light sensors such as cameras and LiDARs. In this case, the so-called "WiFi sensors" use radio frequency signals rather than light or visual cues to see, so they can work in conditions where cameras and LiDARs struggle -- in low light, changing light, and repetitive environments such as long corridors and warehouses.

And by using WiFi, the technology could offer an economical alternative to expensive and power-hungry LiDARs, the researchers noted.

A security technique to fool would-be cyber attackers

Multiple programs running on the same computer may not be able to directly access each other's hidden information, but because they share the same memory hardware, their secrets could be stolen by a malicious program through a "memory timing side-channel attack."

This malicious program notices delays when it tries to access a computer's memory, because the hardware is shared among all programs using the machine. It can then interpret those delays to obtain another program's secrets, like a password or cryptographic key.

One way to prevent these types of attacks is to allow only one program to use the memory controller at a time, but this dramatically slows down computation. Instead, a team of MIT researchers has devised a new approach that allows memory sharing to continue while providing strong security against this type of side-channel attack. Their method is able to speed up programs by 12 percent when compared to state-of-the-art security schemes.

Top Coding Websites to visit

<https://www.topcoder.com>

TopCoder is one of the original platforms for competitive programming online. It provides a list of algorithmic challenges from the past that you can complete on your own direct online using their code editor. Their popular Single Round Matches are offered a few times per month at a specific time where you compete against others to solve challenges the fastest with the best score.

Programming Jokes

Q: How many developer does it take to change a light bulb?

A: none, that's a hardware problem

Q: "Whats the object-oriented way to become wealthy?"

A: Inheritance

Q: Why did the developer quit his job?

A: Because he didn't get arrays.

Q: What did the Java code say to the C code?

A: You've got no class.

Q: Why are Assembly programmers always soaking wet?

A: They work below C-level.

Q: How did the programmer die in the shower?

A: He read the shampoo bottle instructions: Lather. Rinse. Repeat.