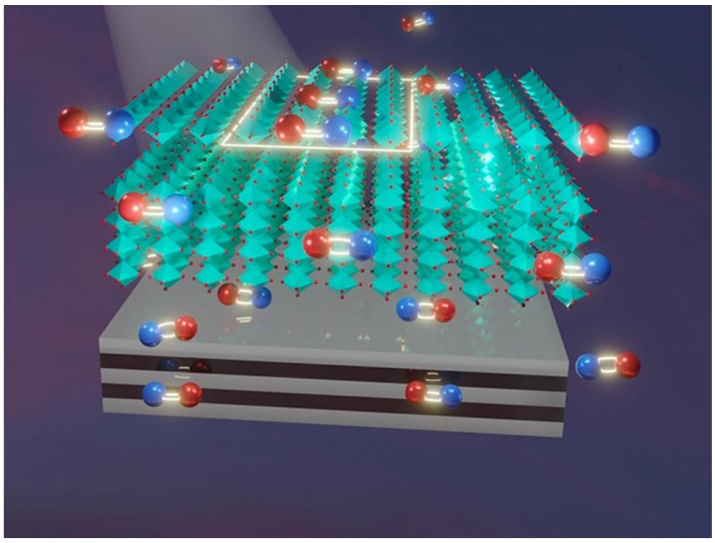
Tech Insider Stories 10 March 2023

Story 1: Scientists have discovered a way to boost the efficiency of solar panels by 250%

Source: Sciencealert.com Story by David Nield

Link: https://www.sciencealert.com/scientists-boost-the-efficiency-of-a-cheap-and-promising-solar-panel-material-by-250



The red and blue pairings represent electron-hole pairs. The perovskite crystalline material (cyan) sits atop the layered metal substrate (grey). (Chloe Zhang/University of Rochester)

- Before we dig into this breakthrough we need a quick refresh on today's current solar panel technology:
    - Almost 90% of the World's solar panels today are based on some variation of silicon which is used to make the photovoltaic cells that convert sunlight into electricity.
    - And today's solar panels use glass that does two things:
        - Transmit sunlight without absorbing it and

    - Concentrate that light…. thanks to a reflective coating applied to one or both sides of the glass.

- With this in mind, here's the big news.

- A team of international researchers, headed by scientists at the University of Rochester in New York, recently announced a new way to make solar panels dramatically more productive by using alternatives for both silicon and glass.

- The scientists discovered that an abundant mineral called perovskite is better than silicon at absorbing higher energy forms of light.

- They also discovered that by combining a specific form of perovskite with a substrate of metal instead of the treated glass used to concentrate light, the efficiency of converting solar light to electricity increased by 250 percent!

- This is great news, but the researchers also noted they still need to figure out how to make the perovskite materials more stable and longer-lasting. To make this commercially viable.

Story 2: The James Webb Space Telescope spotted something that's shaking up the scientific world!

Source: CNN Story by Ashley Strickland

Link: https://www.cnn.com/2023/02/22/world/webb-telescope-massive-early-galaxies-scn

Observing the universe with the James Webb Space Telescope NASA, ESA, CSA, STScI

- For decades scientists have agreed that galaxies began as small clouds of stars and dust that grew slowly over vast amounts of time.

- But when astronomers recently used the James Webb Space Telescope to peer back in time to the early days of the universe, they spotted something totally unexpected.

- This month an international team of scientists disclosed that the telescope has revealed six massive galaxies that existed between 500 million and 700 million years after the big bang that created the universe.

    - According to established scientific theories, galaxies of this age should be small.

    - The huge size of the recently discovered six galaxies means the universe developed much faster than previously thought.

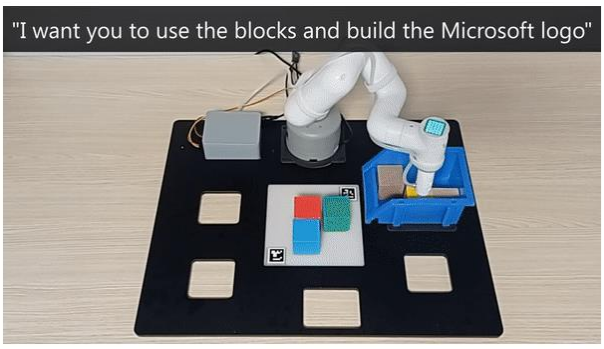
- This discovery conflicts with 99% of scientific models representing early galaxies in the universe, which means scientists need to entirely rethink how galaxies formed and evolved.

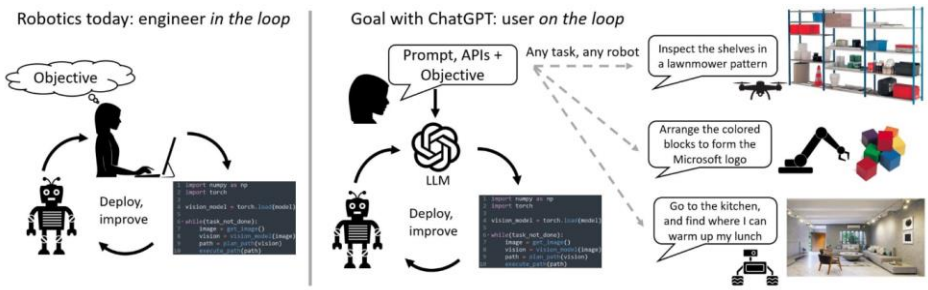
Story 3: Key trend to watch: Microsoft wants to bring ChatGPT's artificial intelligence capabilities to robots

Source: Microsoft Blog

Link: https://www.microsoft.com/en-us/research/group/autonomous-systems-group-robotics/articles/chatgpt-for-robotics/

See video here: https://www.youtube.com/watch?v=NYd0QcZcS6Q





- Last Week, I talked about Microsoft injecting artificial intelligence capabilities into their Bing and Edge web browsers using technology based on ChatGPT from an outfit called OpenAI.

- You may have heard about ChatGPT, but what is it?

- ChatGPT is an artificial intelligence chatbot launched in November last year that can respond to a user's questions and requests with detailed human-like text responses and answers.

- ChatGPT does this by tapping vast databases spanning many domains of knowledge.

    - ChatGPT has been controversial with stories about its sometimes-uneven factual accuracy.

    - But it's a key artificial intelligence development that's got the tech community buzzing.

- In a recent blog post Microsoft outlined its goal to see if ChatGPT can think beyond text, and reason about the physical world to help with robotics tasks.

- In a nutshell, here's what Microsoft hopes to do with ChatGPT:

    - Today we still rely heavily on hand-written software code to program and control robots.

- The process begins with a highly skilled expert who can translate the instructions [or steps] needed for a robot to perform a task into software code for the system.

- But what if a non-technical user could have a natural, conversational interaction with ChatGPT to ask a robot to perform a specific task, such as go to the kitchen

and find my coffee mug, and the request generates the commands needed to make it happen?

- If Microsoft's experimental research fully pans out and becomes real-world deployable it will fundamentally democratize robotics, and I plan to monitor it closely.

Story 4: It's women's history month – where you can learn about 10 women in science who changed the world

Source: Discover.com Story by Megan Schmnidt

Link: https://www.discovermagazine.com/the-sciences/meet-10-women-in-science-who-changed-the-world

- Here are three examples:

  Ada Lovelace, Mathematician
  Dec. 10, 1815-Nov. 27, 1852

  Ada Lovelace (Credit: Alfred Edward Chalon/Science Museum Group/Public Domain)

  - Lovelace is regarded as the first computer programmer — long before modern computers were invented.

  - Her notes on Charles Babbage's proposed analytical engine (a programmable, general-purpose computer), is considered to be the very first computer algorithm.

  Gladys West, Mathematician
  b. 1930-

Gladys West (Credit: U.S. Air Force)

- West's work in developing mathematical modeling of the shape of the Earth served as the foundation of GPS technology.

- In 2018, she was inducted into the U.S. Air Force Space and Missile Pioneers Hall of Fame, one of the Air Force space command's highest honors.

Jennifer Doudna, a groundbreaking biochemist

Born 1964

Jennifer Doudna (Credit: Duncan Hull)

- Doudna was one of the primary developers of CRISPR, a ground-breaking technology for editing the complete set of genes present in a cell or organism.