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Applied Science and Humanities Department

THE VISION

The Department of Applied Science and Humanities committed to dynamically integrate the components Science, Humanities Engineering to groom students to transform them as globally acknowledged professionals.

To keep pace with fast developing scenario of technology and socio economic environment while planning to develop a world class technical institution.

THE MISSION

The department is carrying a mission to create and disseminate the knowledge and techniques in the intellectual areas of Engineering and other core areas of Applied Science and Humanities for the betterment of Ecosystem.

To inculcate the importance of Applied Science and develop a natural flair for Engineering and Technology which in turn shall mold students into a competent professional.

"A magic that works is called science"

-KURT VONNEGUT

Humanoid robots could generate $154 billion in revenue over next 15 years, Goldman Sachs reports.

The investment giant was inspired by Tesla's Optimus to conduct the report.
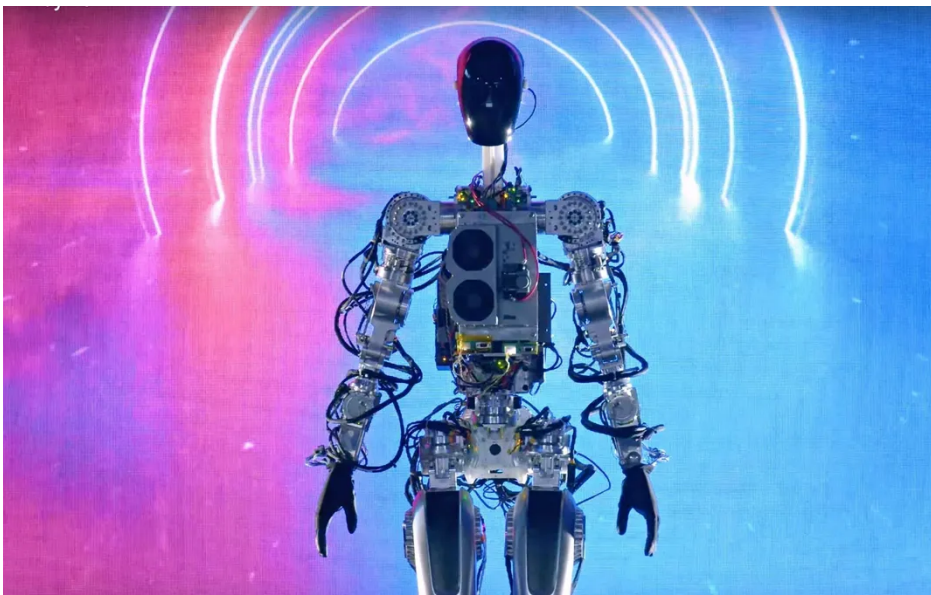
Optimus sparks debate

"The launch of Tesla's humanoid robot prototype, the "Optimus", has again sparked debate about the financial opportunities of such innovation. The investment case for humanoid robots is sizable – we estimate that in 10-15 years a market size of at least US$6bn is achievable to fill 4$ of the US manufacturing labor shortage gap by 2030E and 2% of global elderly care demand by 2035," wrote Goldman Sachs in its report.

"Should the hurdles of product design, use case, technology, affordability and wide public acceptance be completely overcome, we envision a market of up to US$152bn by 2035E in a blue-sky scenario (close to that of the global EV market and one-third of the global smartphone market as of 2021), which suggests labor shortage issues such as for manufacturing and elderly care can be solved to a large extent."

A new Goldman Sachs report is revealing that humanoid robots could be a $154 billion-a-year business within the next 15 years, according to a report by Electrek published on Thursday.

This is as much as the EV market, an impressive achievement to reach in so little time if you consider how long robots have been around. In the past, Tesla CEO Elon Musk has said that the robot industry may eventually be worth more than Tesla's automobile income.

The investment giant was also inspired by Tesla's new unveiling of its own robot to conduct the report.

The tech billionaire already unveiled his 'Optimus' humanoid robot, along with an improved smart summon feature, on Tesla's AI Day 2 on September 30 2022.

But are we really at a stage where robots can be incorporated into our industries?
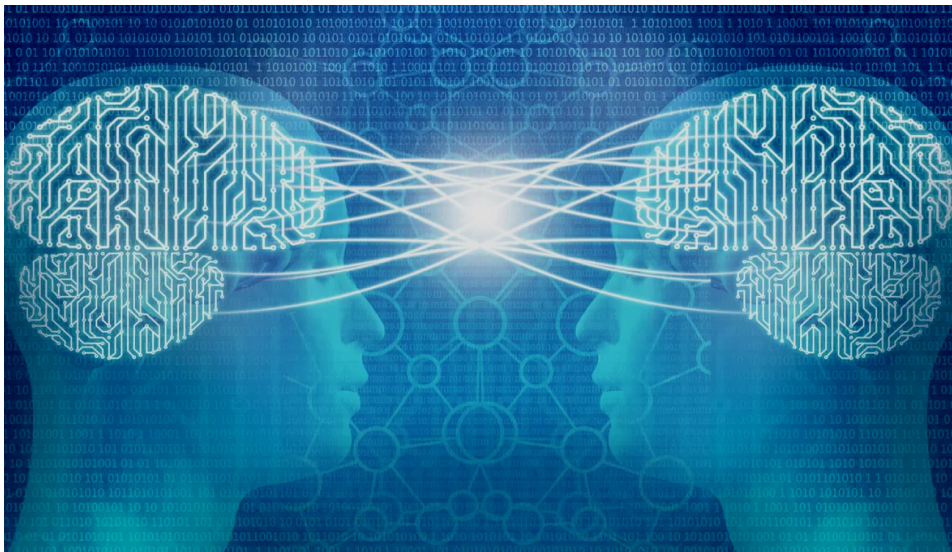
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Monotonous or hazardous tasks

Optimus was first designed to replace humans who perform monotonous or hazardous tasks.

Earlier, in 2021, during the robot's first inaugural event, Musk said that Optimus is built using the same sensors and chipsets as Tesla's self-driving automobiles. It stands five feet eight inches tall and features a screen with relevant information on where the head should be.

Furthermore, the robot's head also houses Autopilot cameras. Despite this, it only weighs 125 pounds but can lift 150 pounds and can carry 45 pounds. It can also travel at five miles per hour.
According to a recent report by Markets and Markets, the humanoid robot market was already valued at $1.5 billion in 2022 and is estimated to reach $17.3 billion by 2027. These estimates are less ambitious than Goldman Sachs' but still indicate a positive growth.

Analysts at Markets and Markets attribute this rise to the increase in robots with advanced features in the retail and medical industries. The market however is currently being held back by the high cost of research and development attributed to the robotics sector. As technology advances, making the engineering of robots more practical, there is no telling how far the sector will develop.

CONTRIBUTED BY: *Sanket Shirke*

SOURCE: *https://interestingengineering.com/culture/humanoid-154-billion-business-in-15-years*

TOP 10 DATA SCIENCE SOFTWARE TO LOOKOUT FOR IN 2023 AND BEYOND

Data has emerged to become the most valuable resource. Data science has enabled the businesses to better understand their customers and meet business objectives. Data is vast, complex and is increasing exponentially.

Keras
Keras is quite a popular programming interface that enables data scientists to easily access and use machine learning platform. What makes this data science software stand apart from the rest is the fact that it is an open-source deep learning API and framework that is written in Python.

Integrate.io
Now, this is a software that requires a special mention for the reason that it brings all data sources together. It is a data integration, ETL, and an ELT platform that can bring all your data sources together. This is just the right software you need to build data pipelines.

Tensorflow
Who isn't aware of Tensorflow? This data science software lays emphasis on deep learning, is launched by Google and is written in C++ and Python. Wondering what's so special about Tensorflow? Well, here is the answer – its capabilities include ML model building either on-premise, on the cloud, in-browser, or on-model.

Trifacta Wrangler
Trifacta Wrangler is an excellent data science software that you really cannot miss out on as it will help you in exploring, transforming, cleaning, and joining the desktop files together. How amazing is that?

Data Robot
If you are looking for a platform that aims at automated machine learning, then Data Robot is all that you need. In addition to providing an easy deployment process, it allows parallel processing and model optimization. It is because of this reason that this data science software is used by data scientists, executives, software engineers, and IT professionals.

KNIME
This data science software is no less than a blessing as it enables the data scientists to blend tools and data types. This open-source platform allows users to use the tools of their choice. Not just that – they can expand them with additional capabilities.

Apache Spark
Looking for an open-source data processing and analytics engine that handles large amounts of data? Well, Apache Spark is all that you need. Its ability to rapidly process data has led to a significant growth in the use of the platform.

Python
Python has gained wide recognition as it comes with a large standard library. This high-level programming language has the features of object-oriented, functional, procedural, dynamic type, and automatic memory management. The fact that Python is extensible makes it way more accepted.

RapidMiner
This is an excellent open-source data science tool that boasts of a self-explanatory drag-and-drop application which is why it forms a part of top 10 data science software to lookout for in 2023 and beyond.

Alteryx
Alteryx was launched in 2015 by MIT data science researchers, and since then it has evolved to become a proprietary software platform. One of the major reasons as to why businesses rely on it is the fact that its most popular open-source tool, "featuretools," allows creation of automated feature engineering.

CONTRIBUTED BY: *Sanket Shirke*

SOURCE: https://www.analyticsinsight.net/top-10-data-science-software-to-lookout-for-in-2023-and-beyond/

How Innovative Ideas Arise

The Toaster Project

The victory was short-lived.
When it came time to create the plastic case for his toaster, Thwaites realized he would need crude oil to make the plastic. This time, he called up BP and asked if they would fly him out to an oil rig and lend him some oil for the project. They immediately refused. It seems oil companies aren't nearly as generous as iron mines.

Thwaites had to settle for collecting plastic scraps and melting them into the shape of his toaster case. This is not as easy as it sounds. The homemade toaster ended up looking more like a melted cake than a kitchen appliance.

This pattern continued for the entire span of The Toaster Project. It was nearly impossible to move forward without the help of some previous process. To create the nickel components, for example, he had to resort to melting old coins. He would later say, "I realized that if you started absolutely from scratch you could easily spend your life making a toaster."

In 2010, Thomas Thwaites decided he wanted to build a toaster from scratch. He walked into a shop, purchased the cheapest toaster he could find, and promptly went home and broke it down piece by piece.

Thwaites had assumed the toaster would be a relatively simple machine. By the time he was finished deconstructing it, however, there were more than 400 components laid out on his floor. The toaster contained over 100 different materials with three of the primary ones being plastic, nickel, and steel.

He decided to create the steel components first. After discovering that iron ore was required to make steel, Thwaites called up an iron mine in his region and asked if they would let him use some for the project.
Surprisingly, they agreed.

Don't Start From Scratch

Starting from scratch is usually a bad idea.
Too often, we assume innovative ideas and meaningful changes require a blank slate. When business projects fail, we say things like, "Let's go back to the drawing board." When we consider the habits we would like to change, we think, "I just need a fresh start." However, creative progress is rarely the result of throwing out all previous ideas and innovations and completely re-imagining of the world.

Consider an example from nature:
Some experts believe the feathers of birds evolved from reptilian scales. Through the forces of evolution, scales gradually became small feathers, which were used for warmth and insulation at first. Eventually, these small fluffs developed into larger feathers capable of flight.

There wasn't a magical moment when the animal kingdom said, "Let's start from scratch and create an animal that can fly." The development of flying birds was a gradual process of iterating and expanding upon ideas that already worked.

The process of human flight followed a similar path. We typically credit Orville and Wilbur Wright as the inventors of modern flight. However, we seldom discuss the aviation pioneers who preceded them like Otto Lilienthal, Samuel Langley, and Octave Chanute. The Wright brothers learned from and built upon the work of these people during their quest to create the world's first flying machine.

The most creative innovations are often new combinations of old ideas. Innovative thinkers don't create, they connect. Furthermore, the most effective way to make progress is usually by making 1 percent improvements to what already works rather than breaking down the whole system and starting over

COMPLIED BY: *Jenisa Dsilva*

SOURCE: https://jamesclear.com/dont-start-from-scratch

Iterate, Don't Originate

The Toaster Project is an example of how we often fail to notice the complexity of our modern world. When you buy a toaster, you don't think about everything that has to happen before it appears in the store. You aren't aware of the iron being carved out of the mountain or the oil being drawn up from the earth. We are mostly blind to the remarkable interconnectedness of things. This is important to understand because in a complex world it is hard to see which forces are working for you as well as which forces are working against you. Similar to buying a toaster, we tend to focus on the final product and fail to recognize the many processes leading up to it. When you are dealing with a complex problem, it is usually better to build upon what already works. Any idea that is currently working has passed a lot of tests. Old ideas are a secret weapon because they have already managed to survive in a complex world.
Iterate, don't originate.

FE Orientation Programme

The Department of Applied Science and Humanities had organized FE orientation programme for FE students and parents on 29th October 2022 and 5th November 2022. The objective of the programme was to guide the students and parents about the college and it's rules and regulation by the Campus Director Dr. Jitendra B. Patil. Following Campus Director's address vote of thanks was given by the HOD Mr. Shivam Shukla for the first orientation and Mrs. Neha Shah for the second. The parents and students were asked fill the feedback form to give their opinions and suggestion about the orientation programme and then were asked to take a selfie in front of the orientation banner to create a memory of beginning of a new chapter of their life.

EDITED AND COMPLIED BY JENISA DSILVA AND MARINA THOMAS

STUDENT COORDINATORS: GATI SHINDE AND SANKET SHIRKE

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ADDRESS: UNIVERSAL COLLEGE OF ENGINEERING NEAR BHAJANSONS & PUNYADHAM, KAMAN-BHIWANDI ROAD, VASAI, PALGHAR - 401208