

DIGI DIGEST



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DIGITAL BUZZ

NEWS YOU MISSED

HAVEN'T YOU HEARD? THE AI WARS HAVE BEGUN

Artificial Intelligence and Machine Learning have been the **latest buzz of the century**, with chatbot sensation ChatGPT taking the tech world by storm. Missed the news on the most incredible innovation since the launch of the internet, ChatGPT? Please do check it out at <https://openai.com/blog/chatgpt>.

Google and Microsoft are rushing into space after the ChatGPT bot caught the imagination of web users worldwide. With Microsoft investing \$10 billion in the further development and integration of ChatGPT in the **new version of Bing**, Google has paced itself to launch its rival conversational AI service implementing the LaMDA program, **Bard**. However, the rush to launch Bard hasn't favoured Google, as the first demo contained a question Bard answered incorrectly. The fallout from this blunder led to a significant drop in Google's share price.

"Predicting how the technological feud between Google and Microsoft will ultimately pan out is difficult. Both companies are major players in the technology industry with significant resources and capabilities. ChatGPT and BARD are powerful language models with their strengths and capabilities." The above text is a **gist of the conversation engaging the global technological sensation, ChatGPT, about the current AI war between Microsoft and Google.**

As bystanders to the AI race between Microsoft and Google, we can only anticipate the upcoming revolutionary innovation and harness the benefits of such valuable technology.

Already noticing the revolutionary changes of such technology in your field? Share your views on ReD.Communications@renewpower.in.

Source: ReD. Editorial Team

MINDTREE BUILD A DIGITAL COMMAND AND CONTROL SOLUTION FOR L&TS GREEN HYDROGEN PLANT

Built using the IoT and data analytics platform of Mindtree NxT, the solution enables remote monitoring and control of all services at the plant to help optimize operational and energy costs and drive effective utilization of resources such as solar and battery energy storage systems.

This will help reduce the plant's carbon footprint and improve operational agility by increasing electrolyzer efficiency and reducing downtime.

Source: PR News

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STARTUPS IN FOCUS

LevelTen Energy (Seattle) is a marketplace for corporate PPAs. It connects renewable energy buyers, advisors, and sellers. It gives them the tools and services they need to get better deals done faster. Its technology-enabled platform facilitates a connection between a broader class of C & I to utility-scale projects. **Read more at <https://www.leveltenenergy.com/>.**



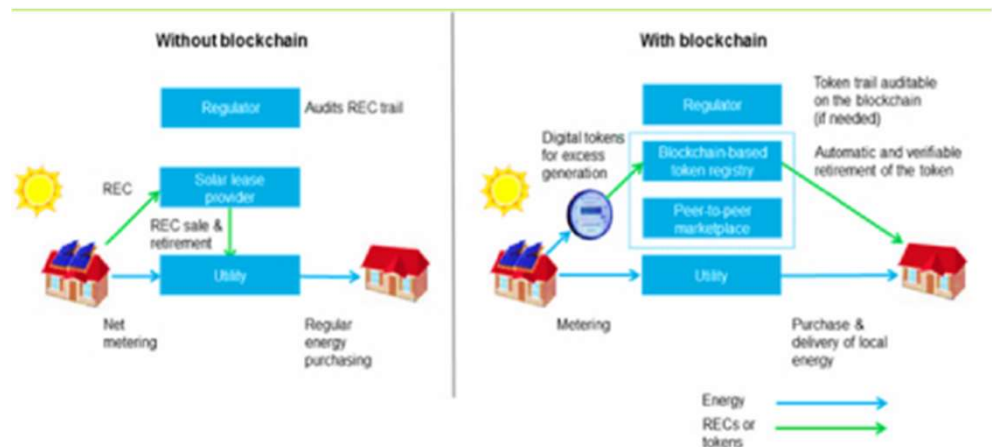
SundayGrids (Bengaluru) is making rooftop solar power accessible to urban Indians.

Essentially a Digital Solar Platform, it enables users to select from 70+ utilities nationwide. Users can monitor solar panels/biscuits using the dashboard and can store monthly credits. Residential and commercial buildings can plug into a clean energy supply without any setup costs and save on power bills, a new method of green financial investment. It would aid in reducing carbon emissions by encouraging the adoption of solar energy. **Read more at <https://www.sundaygrids.com/>.**

EMERGING BUSINESS MODELS

PEER TO PEER ENERGY TRADING

LO3 Energy (Oregon) has created a marketplace for 'local' renewable energy generated on the microgrid. It allows prosumers to sell excess energy to their neighbours and consumers to pay for locally generated clean power. The system's smart meters issue tokens for every kWh of rooftop solar power generation that is not consumed by the prosumer.



Source: Bloomberg NewEnergy Finance

Many such POCs have also been launched in India by PowerLedger along with Tata Power, UPPCL and others. LO3 built a micro-grid in Brooklyn, New York, where it tested the platform. Households with rooftop solar panels act as producers of renewable energy, and others are pure consumers.

Blockchain technology is used by many firms to enable **P2P energy trading**. The decentralized ledger provides the trust needed by the players to trade energy. The players are identified and linked to the blockchain-backed software of a firm. Then they can start trading the excess rooftop power they generate with industrial/commercial players or other Prosumers who need it at that time.

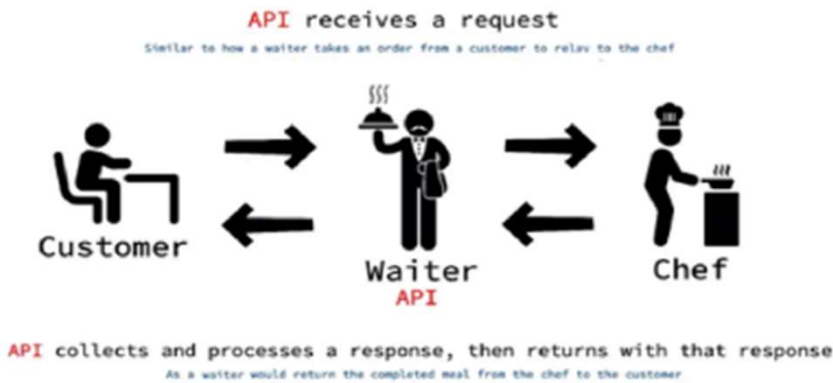
Source: Bloomberg

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DATA SCIENCE BOOTCAMP

API (APPLICATION PROGRAMMING INTERFACE)

APIs are very technical and yet they are everywhere - ever wondered what this API is? Application Programming Interface is a set of rules that enable two software to interact (share data, information, etc). An API looks more or less like a URL with additional codes defining rules of access and keys. ReD. uses APIs to fetch data from external software that provide API services.



Akin to a waiter at a restaurant, an API receives the request from the customer (Client side) and communicates it to the Kitchen (Server side). Based on the availability of the dishes and other checks, the kitchen then hands over the output to the waiter to be handed back to the customer. Note, that the waiter doesn't let you access the recipe of the food you get just the output.

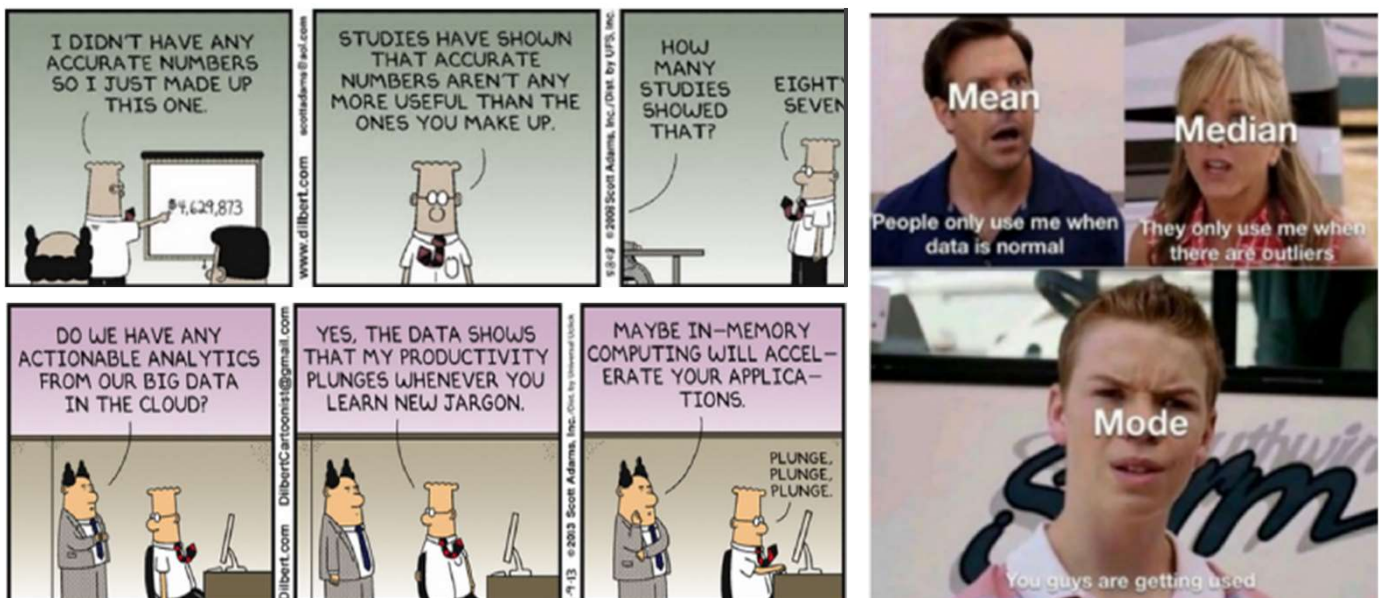
Source: ReD. Editorial Team

See another explanation here: <https://www.youtube.com/watch?v=Yzx7ihtCGBs>

Follow these accounts to learn more

- StatQuest (<https://www.youtube.com/@statquest>) - breaks down complicated Statistics and Machine Learning methods into small, bite-sized pieces that are easy to understand
- Towards Data Science (<https://twitter.com/tdatascience>) – a platform for sharing ideas, codes, and concepts on Data Science

JUST FOR LAUGHS



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ENHANCING RENEW'S DIGITAL MATURITY

USE CASE STORY

AQUAMIZER: A UNIQUE HYDRO GENERATION OPTIMIZER

Problem Statement:

Unlike solar and wind power, hydropower generation is controllable to a large extent. The estimation of generation potential depends on discharge forecasting, which is a function of various factors. There are multiple operational constraints to be considered while deciding generation schedules across 96-time blocks. Thousands of possible options exist for each day. Manually performing this operation was a humongous task which took a lot of bandwidth of the hydro team on a daily basis. Also, it was a great challenge to manually choose the best generation profile out of various combinations.

Solution:

Hydro and ReD. team worked in tandem to solve the above problem (a big shout out to Saurabh Singla from the Hydro team for helping drive this from the business's side). After completing the exploratory data analysis and constraint modelling, our data scientist used advanced analytics to build a unique solution. The model generates the most optimal generation profile across all 96-time blocks considering all operational constraints and future market prices.

Benefits:

Apart from the benefit of process automation, there is an estimated 1.8% increase in annual revenue, as the model gives the most optimum result.

Source: ReD. Editorial Team



SAURABH SINGLA,
HYDRO TEAM



We have been using the outputs generated by Aquamizer and have noticed that it never fails to impress. We also have the option of multiple schedules by changing operating conditions. The schedules take care of all operational constraints, are generated on time, and are the most optimized. This digitization is really helping us in enhancing our revenue.

-Makarand Joshi,
Plant Head, Hydro Plant

APPLICATION OF EMERGING TECHNOLOGIES

NATURAL LANGUAGE PROCESSING

What is Natural Language Processing?

Natural language processing (NLP) lies at the intersection of linguistics, computer science, and artificial intelligence. It enables computers to understand, interpret, and manipulate human language in order to perform tasks such as language translation and text summarization. It has the potential to transform businesses by allowing computers to process and analyze large amounts of unstructured data (text). This has a wide range of applications, including sentiment analysis, chatbot development, and content recommendation systems. For example, NLP can be used to automatically categorize customer feedback by analyzing sentiment in their emails (positive, neutral, or negative).

How is ReD. Bridging The Gap?

Leveraging Deep learning and advanced NLP techniques, ReD. has categorized the spend across different material based on their description. NLP was used on a dataset of material codes and their corresponding descriptions. Once the trained model learns the relationship between description and their meanings, it automatically groups similar material codes into clusters. This model further extracts important phrases from each cluster. As a result, there is full visibility on procurement spends, which identifies saving opportunities and eventually improve the firm's productivity.

Source: ReD. Editorial Team