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In This issue.....

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Introduction to Data Science

Data Science is the process to find valuable information or hidden patterns from raw/source data or unstructured data. By analyzing the raw/source data for finding hidden patterns as well as valuable information to improve user experience.

According to me, "Data is the Soft Gold"

In a simple word data science is the combinations of mathematics, computer science, statistics and domain expertise.

What Is Data Science?

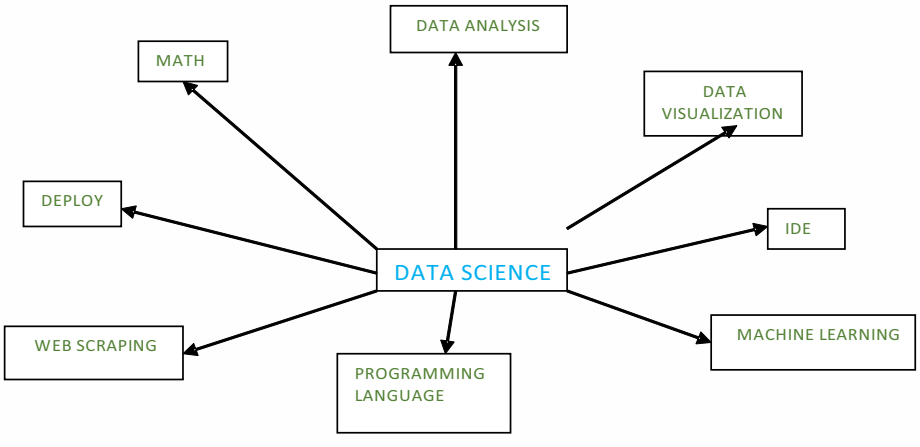
- Identifying Trends, Patterns and Correlations
- Turning data into data products
- Analyzing Data to get insights
- Contextualizing, Applying and Understanding

Data science is a new interdisciplinary field of formula for solving a problem for data and systems, scientific procedure for data and to extract out. Data is the foundation for any organization /company. Huge quantity of ordered and unordered data can be identified.

Maximizes the efficiency and helps to detect new opportunity in the market and increase the competitive advantage of any organization. Data Science is used to investigate and analyze a large amount of data to help in taking decisions in many industries such as science, engineering, economics, politics, finance, and education.

Data science uses the computer science, ML and statistics collect information to data products by analyzing, visualizing, integrating and interacting with data.

Data science provides proper planning and solutions for some industries. Today there is no industry in the world that does not use the data.



MACHINE LEARNING:
- Classification
- Regression
- Reinforcement Learning
- Deep Learning
- Dimensionally Reduction
- Clustering

DATA ANALYSIS:
- Feature Engineering
- Data Wrangling
- EDA

PROGRAMMING LANGUAGE:
- Python
- R
- JAVA

DATA VISUALIZATION:
- Tableau
- Power BI
- Matplotlib, GG Plot, Seaborn

MATH:
- Statistics
- Linear Algebra
- Differential Calculus

WEB SCRAPING:
- Beautiful Soap
- Scrapy
- URLLIB

DEPLOY:
- AWS
- Azure

IDE:
- Pychaem
- JUPYTER
- Co laboratory
- Spyder
- R-Studio

Today there is no industry in the world that does not use the data. Data science is the tool for industries that use data science like Banking, Finance, Agriculture, manufacturing, Education, transport etc.

Types of Data:

- Unstructured data: Text Data, image, video and sound
- Relational Data (Tables/Transaction/Legacy Data)
- Semi-structured Data (XML)
- Graph Data
- Streaming Data
- Social Network, Semantic Web (RFD)

Who are the data scientists?

Data scientist and analyst both do this same thing, both must have a good holds over analytics, algorithms, ML, data management functions as well as statistical skills.

Data scientists get hired by any organizations to handle and manage a bulk amount of data by analyzing /processing the raw data to valuable information.

Data scientist can understand the background domain, implement the solution efficiency, and design solutions that produce added value to the organization/firms.

Data scientist is experts in software engineering, application domain and statistics/machine learning.

Data scientist must be knowledgeable about domain, suppose a data scientist does not know about agricultural domain like soils and crops then cannot improve the quality of products.

“The sexy job in the next 10 years will be statistician” Hal Varian, Google Chief Economist

“Data scientists are kind of like the new Renaissance folks, because **data science is inherently multidisciplinary.**” John Foreman, Vice President of Product Management at MailChimp.

Advantages

- In demand: there is huge demand especially in business.
- Improves the quality of data.
- Improves services and quality of products.
- DS is versatile

Applications and Domains

- Healthcare
- Internet Search (Google Search)
- Website Recommendations
- Fraud and Risk Detection
- Agriculture
- Transport
- E-commerce
- Manufacturing
- Banking
- Finance
- Education

What do you need to become a Data Scientist?

To become a Data Scientist, you must be an expert in technologies such as R, SQL, Python, MatLab and expert in Statistics, Data Manipulation, Data Wrangling, Predictive Modeling and Data Visualization.

Note: Every industry needs Data Scientist, Data analyst, Statistician, AI Application Developers etc.

List of skills

1: At least one programming language: R or Python

2: Machine Learning Algorithms

3: Statistics

4: Data Wrangling

5: Deep learning (Advanced Machine Learning)

6: Data Visualization

7: Big Data Processing Frameworks

8: Data Extraction, Transformation and Loading

How can a fresher start a career in Data science?

To start a career in data science some of the prerequisites you must have like strong stuff on mathematical concepts like statistics, probability, and linear algebra and basic knowledge of programming languages like Python or R also with the fundamentals of SQL Connections.

As you know that data science is the combinations of mathematics, statistics and domain expert.

If you want to select the data science industry, it is dependent on your interest level and educational background.

Some important points which are very needed to start a career in data science industry:

1) Take up a course and complete it

2) Choose a tool/language

3) Focus on practical applications than theory

4) Work on communication skills

5) Follow the right resources

Reliance Jio Launches (Made in India) Jio Pages Web Browser

Reliance Jio recently launched a new web browser called JioPages built on the Chromium Blink engine. The browser comes with a slew of features including Emoji domain support, localized news content curation, a smart download manager, incognito browsing, and encrypted connection. It also offers support for eight Indian languages including Hindi, Marathi, Tamil, Gujarati, Telugu, Malayalam, Kannada and Bengali.

The browser can be installed via Google Play Store. Reliance Jio hasn't launched an iOS version of JioPages as of now, and can only be currently installed on Android smartphones. Users can also select the app language as well as set up their regional preferences from different states.

The company also states that the browser comes with web security and data privacy. So, you get a PIN-locked Incognito Mode and a built-in Adblock Plus. Moreover, users will have the option to select a default search engine where they get several options like Google, Bing, Yahoo, Duck Duck Go, and JioPages. Users can also select a dark mode theme for the browser and will have the ability to choose custom themes for the browser. Now, although JioPages has been designed in India, its underlying Chromium Blink engine has been developed with contributions from Google, Facebook, Microsoft, Opera Software, Adobe Systems, and others. Reliance Jio further states that this Chromium Blink engine will help offer good webpage rendering, faster page loads, efficient media streaming, Emoji domain support, and encrypted connection to the users.

Here's a look at the key features of JioPages browser:

1. Personalised Home Screen

Users have the option of setting any of the leading search engines in the market such as Google, Bing, MSN, Yahoo or Duck Duck Go, as their default search engine. They could also pin the links of their favourite websites on the home screen for quick and easy access.

2. Personalized theme

Users could choose from a variety of colourful background themes to enhance browsing experience. They could also switch to 'Dark mode' for an eye-friendly viewing experience at night.

3. Personalised Content

The content feed is customised to suit the user's preference in terms of language, topic and region. In addition to this, JioPages sends notifications only on topics that are either important or of interest to the user.

4. Informative Cards

An Informative Card captures key numbers, trends, symbols or headlines of a given topic, for e.g. stock market trends, commodity prices or cricket score, and displays them as compact clickable banners on the screen.

5.Regional Content

The browser supports eight Indian languages: Hindi, Marathi, Tamil, Gujarati, Telugu, Malayalam, Kannada and Bengali. Users also have the option of customising the content feed according to their

preferred state. Upon selecting a state, the popular sites of the state start appearing on the screen.

6. Advanced Download Manager

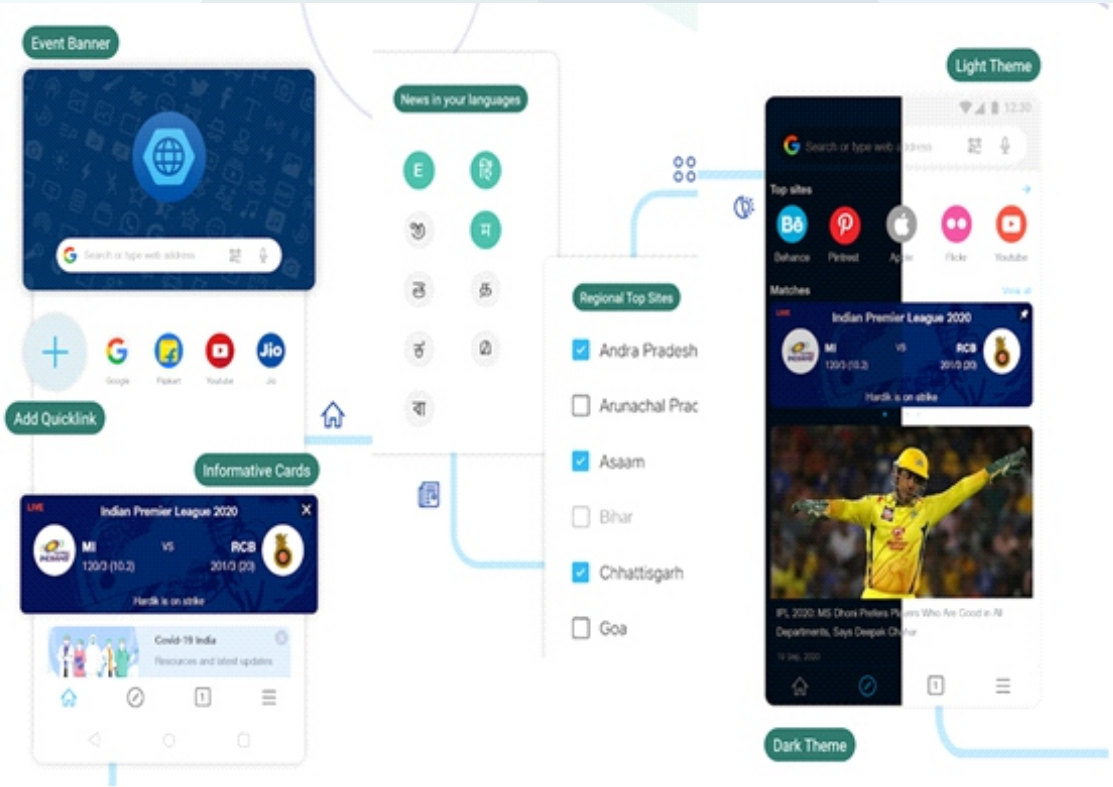
The browser automatically categorises downloads according to the file type, i.e. Image, Video, Document or Pages. This makes file management easier for the user.

7. Incognito Mode

The Incognito mode enables private browsing by preventing browsing history from being stored in the system. On JioPages, user has the option of setting a four-digit security PIN or fingerprint as an access code to the Incognito mode.

8. Ad Blocker

The browser blocks unsolicited ads and popups to provide the user a seamless browsing experience.



Microsoft partners with Elon Musk's Space X to connect Azuire cloud to starlink satellite internet of Space X

Microsoft Corp is partnering with billionaire entrepreneur Elon Musk-led SpaceX and others as it expands its cloud-computing platform into space, the software giant said on Tuesday (20-10-20).

The partnership would allow Microsoft to connect its Azure cloud computing platform to SpaceX's network of low-Earth orbiting satellites, offering the software company an edge in its battle with the rival cloud platform from Jeff Bezos' Amazon.com Inc.

Cloud companies have seen a surge in demand this year as more businesses use their services for switching to work from home due to the Covid-19 pandemic. Microsoft in recent months has tested its Azure cloud with satellites in space, and in September unveiled its Azure Space venture, tapping into the demand for data-heavy space services.

The services include "disaster prediction and tracking, increased visibility of supply chains and economic activity, and many others," the company has said in US regulatory filings.

"Where it makes sense, we will work with you, co-selling to our mutual customers, co-selling to new enterprise and future customers, and basically bring the power of the Starlink connectivity to the Azure infrastructure," SpaceX president Gwynne Shotwell told Tom Keane, Microsoft's corporate vice president of Azure Global, in a promotional video.

SpaceX, known for its reusable rockets and astronaut capsules, is ramping up satellite production for Starlink, a growing constellation of hundreds of internet-beaming satellites that Musk hopes will generate enough revenue to help fund SpaceX's interplanetary goals.

Earlier this month, SpaceX won a $149-million contract to build missile-tracking satellites for the Pentagon, its first government contract to build satellites.

Bezos, whose space company Blue Origin is aiming for a debut launch of its New Glenn rocket in 2021, plans to deploy a satellite constellation rivalling SpaceX's Starlink dubbed Project Kuiper, a proposed network of 3,236 satellites.

Soon Microsoft Teams will have the AI Based Noise suppression feature

American software major Microsoft is reportedly planning to bring a value-added noise cancellation feature to its video conference solution Teams app in the near future. This comes at a time when work on the Covid-19 vaccine is still underway and recent reports suggest, it will be available only in mid-2021 and till then, we people have to be vigilant and develop good personal hygiene. We should venture out only if necessary and always maintain social distance. Also, many corporate companies have been generous by extending Work-From-Home (WFH) option for their employees for several more months.

With WFH being the new normal and expected to continue until at least March 2021, video conferencing solutions on both mobile and computer have become an important tool to attend virtual team meetings and do presentations. However, sometimes, the home environment particularly when children are around, the place gets noisy with screams, chatter and the loud music and cartoons played on TV.

So, Microsoft is working on Artificial Intelligence (AI)-based technique to suppress the noisy background. This feature is expected to be released to the Teams app in November.

"AI-based, real-time noise suppression, will be added to Microsoft Teams. This feature will automatically remove unwelcome background noise during your meetings. AI-based noise suppression works by analyzing an individual's audio feed and using specially trained deep neural networks to filter out the noise and retain only the speech signal. This is an update to the existing noise suppression. Users will now have control over how much noise suppression they want. The “High” setting is new and will suppress more background noise," the company said.

Also, Microsoft is working to bring Live Transcription with Speaker attribution. This will help people take down notes and also go back to the chat tab for any clarification. This feature is expected to be rolled out in the Teams app in November. "Live transcripts provide another way to follow along with what has been said and who said it. After a meeting, the transcript file is automatically saved in the chat tab for that meeting," the company said.

NASA's SOFIA discovered water in new regions of Moon

Water molecules have been detected in the Moon's surface by NASA's flying Stratospheric Observatory for Infrared Astronomy (SOFIA). Researchers found traces of the life-sustaining substance in one of the largest lunar craters visible from Earth, the Clavius Crater. This ancient impact site receives a significant portion of sunlight compared to other areas of the Moon, which suggests that lunar water might not be limited to shadowy sites at the Moon's poles.

“Without a thick atmosphere, water on the sunlit lunar surface should just be lost to space,” Casey Honniball, the study's lead author, said in a NASA press release. “Yet somehow we're seeing it. Something is generating the water, and something must be trapping it there.”

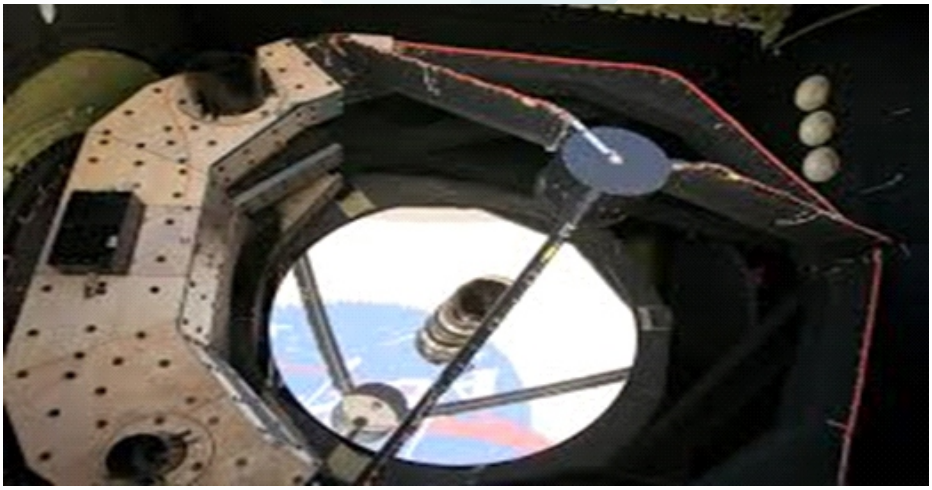
Water, humanity, and the Moon

The key to how water could survive such a harsh lunar environment might be related to another harsh reality on the Moon: micrometeorites. These small pieces of space rock — only a few hundredths of an inch or so wide — rain down on the lunar surface, potentially forming beadlike glass structures upon impact.

It's these structures that the researchers think could trap and protect water molecules from sunlight. Alternatively, the researchers say, the water molecules could be caught between grains of lunar soil that shields them from sunlight. And depending on what exactly is protecting the newfound water from the Sun, scientists think astronauts may eventually be able to mine it.

However, it's important to note that the amount of surface uncovered is still rather small. NASA compares the amount to 100 times less than is found in the Sahara Desert. So, researchers aren't quite sure what these findings mean for supporting a sustainable human presence on the Moon.

The new find marks the first time SOFIA — a modified Boeing 747 mounted with a 100-inch reflecting telescope — has looked at the Moon. Follow-up flights by the aircraft will search for additional water signatures within sunlit portions of the Moon. The results will then be used to inform future NASA lunar missions, including NASA's Volatiles Investigating Polar Exploration Rover (VIPER).



NASA and Nokia collaborated to setup 4G Mobile network on moon

Nokia has been selected by NASA to setup the first cellular network on the moon, as there is the plan for a future where humans return there and establish lunar settlements.NASA aims to return humans to the moon by 2024 and dig in for a long-term presence there under its Artemis programme.

Nokia is the first wireless broadband communications system in space would be built on the lunar surface in late 2022, before humans make it back there.It will partner with a Texas-based private space craft design company, Intuitive Machines, to deliver the equipment to the moon on their lunar lander. The network will configure itself and establish a 4G/LTE communications system on the moon, Nokia said, though the aim would be to eventually switch to 5G.

The network will give astronauts voice and video communications capabilities, and allow telemetry and biometric data exchange, as well as the deployment and remote control of lunar rovers and other robotic devices, according to the company.The network will be designed to withstand the extreme conditions of the launch and lunar landing, and to operate in space. It will have to be sent to the moon in an extremely compact form to meet the stringent size, weight and power constraints of space payloads. Nokia said the network would be using 4G/LTE, in use worldwide for the last decade, instead of the latest 5G technology, because the former was a more known quantity with proven reliability. The company would also "pursue space applications of LTE's successor technology, 5G".

Adversarial Machine Learning Threat Matrix – A Framework To Defend AI Systems From Adversarial Attacks

Microsoft, in collaboration with MITRE research organization and a dozen other organizations, including IBM, Nvidia, Airbus, and Bosch, has released the Adversarial ML Threat Matrix, a framework that aims to help cybersecurity experts prepare attacks against artificial intelligence models.

With AI models being deployed in several fields, there is a rise in critical online threats jeopardizing their safety and integrity. The Adversarial Machine Learning (ML) Threat Matrix attempts to assemble various techniques employed by malicious adversaries in destabilizing AI systems.

AI models perform several tasks, including identifying objects in images by analyzing the information they ingest for specific common patterns. The researchers have developed malicious patterns that hackers could introduce into the AI systems to trick these models into making mistakes. An Auburn University team had even managed to fool a Google LLC image recognition model into misclassifying objects in photos by slightly adjusting the objects' position in each input image.

The organizations have contributed a collection of adversarial AI system vulnerabilities and hacking tactics to the Adversarial ML Threat Matrix that helps to investigate and overcome online attacks. One sample demonstrates a method of targeting AI models with malicious input data. Another set includes a scenario where attackers manage to replicate an AI that enables the attacker to find weak points in the neural network.

Companies can use this framework to test their AI models' resilience by mimicking practical attack scenarios. Cybersecurity analysts can also use the framework to familiarize themselves with the threats their organizations' systems could face in the near future.

Microsoft says that the framework's objective is to position attacks on ML systems in a framework that security professionals can orient themselves in these new and upcoming threats.

AWS wants to help UK workers learn about cloud computing

Amazon Web Services (AWS), the retail giant's cloud arm, is expanding its cloud education and training program to five additional cities in the UK.

AWS re/Start - a program that teaches participants basic cloud skills, but also practical career skills such as effective communication, time management, interviewing and more - is coming to Blackpool, Leeds, Newcastle, Sheffield, and Edinburgh.

Amazon said it picked these five cities because they are the places where demand for entry-level cloud talent is highest.

No prior experience is needed and AWS claims it will seek out participants from all walks of life - young people, veterans, and people made redundant from non-tech careers.

The company also hopes that, through this program, trainees will be able to connect to potential employers, which should ease the transition from qualification to employment.

Participants can expect to learn Linux, Python, networking, security, and relational database skills through real-world-scenario-based learning, labs, and coursework.

Those that pass the AWS Certified Cloud Practitioner exam will be able to apply for entry-level cloud roles such as cloud operations, site reliability, infrastructure support, and technical-adjacent business support functions.

“It's great to see AWS investing in the UK and expanding their skills program,” said Minister for Digital and Culture, Caroline Dinenage.

“The tech sector is vital to our future and this initiative will help provide people with a valuable opportunity to upskill and retrain, whether that's mid-career or graduates seeking employment.”

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