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Python and Machine learning

Today, Python has become one of the most favoured programming languages among developers across the globe — from process automation to scripting to web development to machine learning — it's used everywhere. Before we delve deeper to understand why Python is steadily becoming a great choice among machine learning professionals, let's have a quick look at where actually the study of algorithms helps in.

Perhaps you already know that artificial intelligence (AI) stands for any intelligence demonstrated by a machine in order to obtain an optimal

solution. Machine learning, which is a part of the broad category of data science, is what takes the solution further by using algorithms that finally helps in making informed decisions.

Professionals are talking about Python but why Python, especially when there're lots of other programming languages? Here are some of the facts:

The need for a good language

Standard expertise in and familiarity with a robust programming language is almost imperative for machine learning professionals. Unless you're a researcher working purely on some complex algorithm, you're expected to use the existing machine learning algorithms mostly and apply them in resolving problems. And this requires a programming hat for you to put on.

The equation between machine learning and Python

Python has obtained a leading position in the machine learning domain today. The combination of simplicity, shorter development time, and consistent syntax make Python well-suited for projects in the field of machine learning.

Extensive set of libraries

Here're some of the most commonly used fundamental Python libraries in machine learning

1.Pandas: Developed upon a NumPy (Numerical Python) array, Pandas offers fast execution speed and various data engineering features.

2.NumPy: It's the fundamental package needed for high-performance data analysis and scientific computing in the Python ecosystem.

3.Scikit-learn: One of the most popular machine learning libraries,scikit-learn supports an array of supervised as well as unsupervised algorithms like decision trees, linear and logistic regression, k-means, and clustering, among others.

4.Seaborn and Matplotlib: Both data visualization and storytelling are critical for any machine learning professional as they often need to carry out an exploratory analysis of datasets before deciding to apply a specific machine learning algorithm.

Great support & Flexibility

Python is completely open source and is supported by a great community. It offers a great array of resources that are capable of enabling developers to work faster. In addition, presence of a huge and active community of developers can help in any and every single stage of a development cycle.

Less amount of code

Machine learning hugely encompasses algorithms, and Python makes it simpler for developers in testing. It comes with the potential of implementing the same logic with as less as one-fifth of code required in other OOP (object-oriented programming languages). In addition, Python's integrated approach lets developers to check code methodology.

Machine Learning

If you're a beginner in this field and plan to proceed in your career with the help of Python, here're some simple yet highly beneficial steps to attain *future of image*.

Brush up fundamental Python skills

Learn Basic machine learning skills

Explore the algorithms

Getting into deep learning

Despite the apparent maturity and age of machine learning, it's perhaps the best time to learn it, mainly because of its practical uses. And Python is probably the best programming language that can help you excel in your career in this field. With a robust understanding of fundamental machine learning and Python skills, you should be all set to dive deeper. Just remember the fact that as with learning any skill, the more you work with it, the better you become. So, practice diverse types of algorithms and try to work with different datasets to obtain a solid understanding of machine learning using Python.

Google Maps Gets New feature for COVID-19 Hotspots

Tapping the new "Covid-19" option in a layers feature in a top corner of a screen will enhance maps using the latest 7-day average of cases per 100,000 people in areas being viewed, it said.

A label will also let users know whether the number of Covid-19 cases in a particular spot is trending up or down, according to Maps product manager Sujoy Banerjee.

The tool is meant to provide "critical information about Covid-19 cases in an area so you can make more informed decisions about where to go and what to do," Banerjee said.

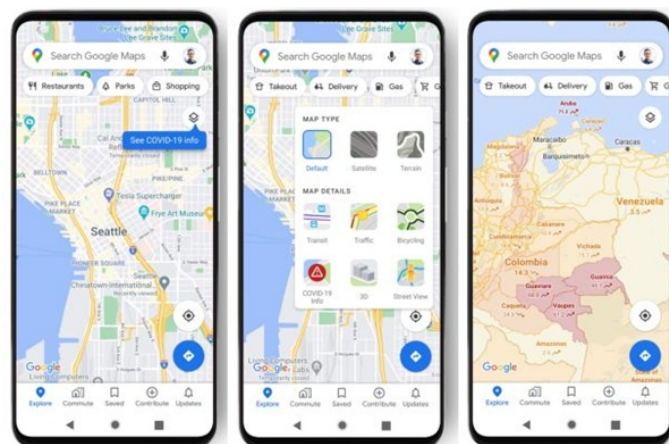
Data used in the Covid layer comes from sources including Baltimore-based Johns Hopkins hospital, the New York Times, and Wikipedia, which get information from public health organizations such as the World Health Organization and government health ministries, according to Banerjee.

The Covid layer is rolling out at last week of September worldwide in versions of the map app tailored for mobile devices powered by Apple or Google-backed Android software, the California based company said.

Google Maps already featured pandemic-related tools such as letting users know when public transit was likely to be crowded.

"While getting around is more complicated these days, our hope is that these Google Maps features will help you get where you need to be as safely and efficiently as possible," Banerjee said.

In the initial phases of the pandemic, Google had come up with a similar feature. In April, Google said it would show the locations of food shelters and night shelters on Google Maps in cities across India to help people find these essential services during the ongoing lockdown. Google, in a statement, said it was working closely with state and central government authorities to surface the locations of these relief centres. Highlighting the locations of food and night shelters on Google Maps was a step to make this information easily available to the users in need, and ensuring they can avail the food and shelter services being provided by the government authorities.



Amazon Unveiled Luna a Cloud based Game streaming service

Amazon recently launched its cloud gaming service called Luna at its Alexa hardware event. The cloud gaming service is similar to Google Stadia, GeForce NOW, Shadow, and Xbox Game Pass Ultimate Cloud Gaming.

Cloud gaming is a new type of online gaming that allows players to run games on remote servers and streams them directly to your devices. This eliminates the need to have high performance and specifications hardware to run graphically demanding games.

The advantage of Luna like other cloud gaming services is that you do not have to download or install games. You can simply browse the game and launch it without any waiting time. Needless to say, it requires users to have a fast internet connection to access Full HD and 4K gaming experience. Amazon has recommended a minimum internet download speed of 10Mbps for 1080p streaming.

Though Luna is still an invite-only service available in the continental USA, it will soon be expanded to other markets. Amazon has confirmed several games that will be a part of the cloud service, including famous titles like Resident Evil 7, GRID, ABZU, A Plague Tale: Innocence, The Surge 2, Yooka-Laylee and The Impossible Lair, Assassin's Creed Valhalla. and Brothers: A Tale Of Two Sons. Several other titles are likely to be added post-launch.

Another major advantage of Luna is that it lets you play games on the devices you already own. You will be able to access the games on your smart TV or using the Amazon Firestick, Mac, PC, and iOS devices. Amazon has confirmed that Luna will be available on Android as well in some time. Luna is compatible with the Luna controller, Xbox one controller, and the Sony DualShock 4. Alternatively, you can also use a mouse and keyboard if you're playing games on your PC.

Luna is integrated with Alexa, so you can simply ask Alexa to launch your favourite games, instead of having to browse through the library.



Mitra the Robot Helps COVID Patients in India Speak to Loved Ones

A hospital in India has deployed a customer-service robot to patrol its wards, connecting coronavirus patients to friends and relatives. Its piercing eyes are equipped with facial recognition technology to help it recall people it has previously interacted with. A tablet attached to Mitra's chest allows patients to see loved ones, as well as medical staff unable to access the wards.

Mitra, the five feet tall humanoid robot is developed by Bengaluru-based start-up Invento Robotics. Mitra, meaning “friend” in Hindi, is best known for interacting with Prime Minister Narendra Modi at an event in 2017.

“It takes a lot of time to recover, and during this time, when patients need their families the most, they are unable to visit,” said Dr Arun Lakhanpal, a doctor at the Yatharth Super Speciality Hospital in Noida Extension, a satellite city of the capital New Delhi.

Mitra is mainly used by patients who are not able to communicate using their phones.

“We mainly discuss my health,” said Makhanlal Qazi, a retired government bureaucrat and coronavirus patient who has used the robot to communicate with relatives. “I came here on Friday and now I have started feeling better. I am feeling very happy now.”

The robot, developed by Bengaluru-based start-up Invento Robotics, cost the hospital 1 million rupees (\$13,600), according Yatharth Tyagi, director of the company that runs the hospital.

Mitra is also being used for remote consultations with specialists to reduce their risk of becoming infected, he added. “Normally it is very difficult for a psychologist or a dietician to see a COVID patient,” Tyagi said, adding the robot is “very useful.”



DRDO Successfully test hypersonic technology demonstrator vehicle

The Defence Research and Development Organisation (DRDO) on Monday(07-09-2020), successfully flight tested a Hypersonic Technology Demonstrator Vehicle (HSTDV), which is an unmanned scramjet vehicle with the ability to travel at six times the speed of sound.

The test was conducted at 11.03 am from Dr A P J Abdul Kalam Launch Complex at Wheeler Island, off the coast of Odisha. The HSTDV tests the indigenously developed hypersonic air-breathing scramjet technology. The scramjets are a variant of air breathing jet engines and have the ability to handle airflows of speeds much higher than the speed of sound. Hypersonic speeds are five times (or more) higher than the speed of sound.

The DRDO, in a series of tweets, stated, “In a historic mission today(07-09-2020), India successfully flight tested the Hypersonic Technology Demonstrator Vehicle (HSTDV), (which is) a giant leap in indigenous defence technologies and a significant milestone towards a Sashakt Bharat and Atmanirbhar Bharat. DRDO, with this mission, has demonstrated capabilities for highly complex technology that will serve as the building blocks for NextGen Hypersonic vehicles in partnership with the industry.”

A press statement from the Ministry of Defence said, “The hypersonic cruise vehicle was launched using a proven solid rocket motor, which took it to an altitude of 30 kilometres, where the aerodynamic heat shields were separated. The cruise vehicle separated from the launch vehicle and the air intake opened as planned. The hypersonic combustion sustained and the cruise vehicle continued on its desired flight path at a velocity of six times the speed of sound, which is nearly two kilometres per second, for more than 20 seconds. The critical events, like fuel injection and auto ignition of scramjet demonstrated technological maturity. The scramjet engine performed in a textbook manner.” At hypersonic speeds, the system has to handle very high fluctuating temperatures, as well as air speed, and thus, development of the material is one of the main challenges, among other complex technologies.

The parameters of launch and cruise vehicle, including the scramjet engine, were monitored by multiple tracking radars, electro-optical systems and Telemetry Stations. A ship was also deployed in the Bay of Bengal to monitor the performance during the cruise phase of hypersonic vehicles. “All performance parameters have indicated a resounding success of the mission,” the MoD said.

The special project of the DRDO consisted of contributions from its multiple facilities. From the Armament and Combat Engineering Cluster, the two facilities from Pune which played a role in the development were the High Energy Materials Research Laboratory and the Research & Development Establishment (Engineers).

With the test, India joins the U.S., Russia and China in the race for hypersonic technology development.



Indian Researchers Can Stop Stubble Burning, By Decomposing Crops with Fungi

The researchers found an alternative of the burning of stubble and crop residue, this is beneficial to nature as well as for farmers. Scientists at the Indian Agricultural Research Institute have developed a novel PUSA Decomposer, which accelerates the decomposition of the dead stubble with the help of fungi. Researchers have put strains of amylolytic and ligninolytic fungi in capsules that produce necessary enzymes that speed up the degradation process. The application isn't the most instant. Capsules have to be scaled to 25 litres of the formulation. To make this degrading formula, farmers will have to boil 150 grams of old jaggery. With the scum removed and the mixture cooled, the jaggery is mixed with five litres of water. After this an addition of 50 grams of gram flour followed by 4 of the aforementioned capsules. Once developed, the mixture should be kept in a warm area for the fungi to activate. This takes around 5 days. IARI officials told to a science magazine

“Once the scaling up is done the formulation has to be diluted using another 200 litres of water for one acre of paddy straw. Every acre of paddy generates about 4-5 tons of straw so in every acre, there would be around 4-5 tons of straw normally, it could take at least 45 days for the decomposition to commence, however, with this formula, this can be completed in 25 to 30 days. This method can be beneficial not just for people who are affected with poor air quality but also farmers, “Based on our experiments, the cost of employing this method will come to about Rs 300 per acre, including the cost of labour. That is not the only benefit though. When organic matter decomposes in the sand, it improves the quality of soil in a way that inorganic fertilizers cannot. As the fungi only impact dead straw, the wheat crop is not in danger.”



IBM and Cambridge Quantum Computing announce random number generator service

This cloud-based quantum computing service includes verification and is now available to members of the IBM Q Network.

IBM and Cambridge Quantum Computing have built a random number generator that uses quantum computing with verification and plan to offer the new capability as a cloud service.

IBM and CQC announced the news Thursday at the final day of the IBM Q Summit. CQC developed the application, which generates true maximal randomness, or entropy,

implemented on an IBM Quantum computer. The random number can be verified and certified as truly quantum for the first time, according to the companies.

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Randomness is used in cybersecurity to encrypt data and communications and to perform simulation analysis in many sectors, including the petrochemicals, pharmaceutical, chemical engineering, finance, and gaming industries.

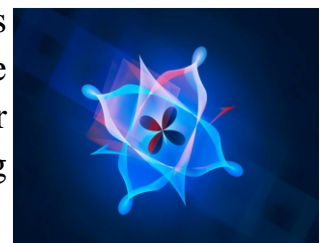
The certified QRNG service integrates a Bell test based on Mermin inequalities, offered through the Qiskit module `qiskit rng`, which validates the true quantum nature of the underlying processes with statistical analysis.

Lawrence Gasman, president of Inside Quantum Technology, an industry research and analysis firm, said in the blog post that certified QRNG is a potentially massive market because there are so many applications of the technology that are possible today, particularly for cybersecurity.

Members of the IBM Q Network get access to the new service first. This group includes more than 100 Fortune 500 companies, universities, startups, and national research labs working with IBM to advance quantum computing.

IBM sees this cloud-based quantum computing service as an important step toward Quantum Advantage. IBM defines quantum advantage as the point where certain information processing tasks can be performed more efficiently or cost effectively on a quantum computer compared to a classical one.

Ilyas Khan, the CEO of Cambridge Quantum Computing, shared this news in a blog post on the CQC site. CQC was part of the founding group of startups in the IBM Q Network's startup program. IBM invested in CQC in January 2020. CQC recently became the first startup-based Hub in the IBM Q Network and works with other members on chemistry, optimization, finance, and quantum machine learning and natural language processing.



Google runs a lip-sync challenge, an AI experiment to teach reading lips

Google has launched a new lip-sync challenge, run by the AI Experiment group of Google, which is the same group working on Google's Pixel device. The aim of this particular lip-sync challenge is to teach Google's AI system the art of reading lips.

Google plans to use real singers to make its AI learn the skill of synchronization. This initiative is seen as a part of an effort by Google to come up with applications for people who have disabilities, particularly speaking.

Regarding the process of taking the challenge, it is designed in a very simplistic way. People interested in taking the challenge will have to simply click on the “Launch Experiment” button. This will redirect the users to the configuration screen which will configure 'Google systems to work with the equipment of the users.

The process does not state the use of a microphone as mandatory. A video camera is all that is needed. The user will be shown in a way very similar to that of video chats in smartphones. After clicking on the “I'm Ready” button which will launch the lip-sync tune, “**Dance Monkey**” by Tones and I. As of now, there is no other option for the lip-sync tune available.

Then the user will have to either sing the song out loudly or silently. Once the user is done singing, another screen will open where the user will be provided with a score on a scale of one to five, in the form of stars. Users using the site can also get the web application code along with the procedure for setting up the application and using it with other web apps.

Google declares on the initial challenge page that the lip-sync challenge is built on Google's TensorFlow.js AI technology. The company further adds that this challenge tracks facial landmarks as the user lip syncs. It is also said that the application is designed in a way to ensure that it works best with Google Chrome.

Google, as of now, has decided not to disclose any extra detail about the expansion or up-gradation of the application. The company has also refrained from stating anything about the availability of the application.

The lip-sync challenge has been launched by Google for people who care to take part. Users willing to testify their individual lip synchronizing ability are advised to visit the site set up by Google.

