Machine learning

Engineer Course

Thesis introduction
Trends in Machine learning

University of Idaho

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•Research on Covid 19

The whole world has been hit because of the Corona Virus attack. And Machine learning has been used to fight this situation by predicting the virus outbreak and identify high-risk patients to save people's lives.

Companies like Blue Dot and Hyper loop use ML algorithms to detect disease outbreaks and stop them from becoming a pandemic. These algorithms are also used by Businesses to plan marketing activities, Expand and survive in the market during this situation.
Companies like Manta labs are providing AI-Driven crop monitoring systems to optimize Agricultural business and reduce the dependencies on Human resources.

Clevy.io a French-based startup is helping people to get to know about the official communication by the Government using AI and ML.
In the beginning, ML was used only to track the Corona Virus spread but now it has been used to find out vulnerabilities. This will help Medical organizations to find the drug to cure the disease with a Sufficient amount of data being available.

AWS has launched the cord19

AWS where you can find the relevant datasets for Covid19 research.

Conversational AI and Voice Assistants

Voice assistants are the bots with which we can give input as voice or text. And it will process our input and perform the task given by us. It has the ability to reply to us through voice/text output.
Nowadays in many websites, Chabot's, Video bots, and voice bots are acting as a new way of interacting with customers and increasing customer engagement at a low cost.
Chabot's that are made with Cognitive conversational AI technology are smarter to understand human dialogues and reply accordingly. This technology has been developed drastically with lots of advancements in its applications ranging from Customer engagement to automation.

Most Popular Examples of Voice assistants are Siri (Apple), Alexa (Amazon), Google assistant, and Cortona (Microsoft).

There are lot of applications of AI in real world.

GANs (Generative Adversarial Networks)

GANs are generative models that are used to represent the existing data but are totally new and different.

Recently their popular application is to generate new images from existing ones (Masterpiece). They have been used to generate new variants of faces from the top celebrities' images.
They are used in applications like Contemporary AI (aiartist.org) art and Gravitational lensing. As a result, they are shaping up the artistic world where computers are able to produce awesome artworks similar to humans. Using AI in the right way is benefiting humans.

GANs also have lead to a lot of malicious and illegal activities like Deep fakes where a non-existing or existing face can be generated and can be used for unwanted activities which is a security threat to the country. It is one of the most popular machine learning trends.

Cyber security

Every organization deals with a lot of data and they want to secure them from malicious and Cyber attacks. So for this purpose to monitor the server status and data transactions machine learning algorithms are used to detect threats and report them.

Cyber security is in high-demand. Companies use tools like SIEMs and other tools to safeguard their organizations. And with ML it becomes easy for them to be alert or get prepared by identifying the upcoming threats by analyzing existing data of previous attacks. As a result, it acts as an extra layer powering up the security of the organization from attacks by a hacker. Nowadays so most companies are looking for ML-based solutions for their cyber security needs.

Different algorithms of machine learning like…

- The classification algorithms are used in Thread monitoring in internet applications.
- Regression algorithms are used to Predict the threat that's gonna come in the future.
- The deep learning algorithms are used to battle with the bots and to verify human identity.

IOT (Internet of Things)

Due to the increase in the number of smart devices this technology has a huge growth as it is expanding its application in different fields all over the world.

So in most of the IoT applications like smart home automation or Industry automation lots of devices are used as a result there are chances of lots of error. With Machine learning algorithms errors are automatically detected and fixed or reported to the concerned person so the maintenance of this complex application becomes very easier by making it faster at a low cost.
Deep learning solutions are also used in connected cars to identify vulnerabilities and alert the user. So there are many companies that are using ML and IoT technology to improve people's lives by enabling intelligent healthcare solutions and advancement in agricultural technology.

Business Solutions

Many organizations have been adopting ML solutions to survive in the long run and to take correct business decisions from the ample amount of data available with them.

ML is more efficient and accurate compared to the traditional method in analyzing the business or the competition and make a decision in launching a new product or adding a new feature. As a result, it helps you to shape your business in such a way that it satisfies the needs of your target audience.

Some of the common applications include making marketing decisions from the dashboards generated with data analysis algorithms.

Computer Vision

Computer vision is mainly used for object detection where a source can identify the target object.
It plays a major role in surveillance systems to identify threats or a particular object. This had been used by the Crime branch to identify criminals.
CCTV camera with computer vision gives a more advanced feature of real-time monitoring and detection of the target object and easily get the information.
In Japan, in 2018 they announced where they will be using object detection to identify the athletes.

There are a lot of Opensource models like darknet, OpenNN, Tensorflow, etc that are easier to implement and highly efficient in implementing computer vision applications.
Some of the commonly used libraries in the CV are OpenCV, Simple CV, Scikit-Image, PyTorchCV and fast ai.

Augmented reality

AR is a technology that plays a major role in a lot of industries like ecommerce, Gaming, Edutech, and much more, and it implemented with the help of AI.
Augmented reality is the future of AI as it is going to improve the Customer Experience to the next level i.e. Bridging the gap between the physical world and the virtual world.
Combining AR and AI to enhance the Mobile experience and many companies are using coreML, ARKit to create Augmented reality applications.
The most popular example of AR in the mobile app and gaming is Pokemon GO. Companies that are currently focusing on AR products are Scapic, Jio Tesseract, Google and Adobe.

Virtual search is a future application of Extended reality which will create a huge impact on how people search for things.

Predictive Analysis

It is the branch of AI where we process the data using machine learning algorithms and predict the outcomes with various data points in the training data.
The applications of predictive analysis are immense as we can mostly predict anything with the correct amount of good quality training data.
There is a huge amount of data generated today.
Over 2.5 quintillion bytes of data are created every single day which is multiple times higher than the data generated in the previous years.
So this huge amount has been utilized for getting outcomes like weather forecast and calamity costs based on previous events.
Data is cleaned and Transformed with several data science processes and tools before it is used in the Model.
The other applications include Stock prediction, disease prediction, Financial analysis, Spam, and fraud detection.

Some of the companies that are expensively using predictive analysis include Google, American Express, Paypal, and many more.
AI comes with pros and cons. It is depends on us how we use it.

Machine Learning in Healthcare

There are many types of research going on to tackle the limitations of machine learning in the healthcare and medicare industry such as time taken in diagnosis and identifying the diseases.
AI helps in detecting deadly diseases like cancer in its early stages and saves the lives of people by adopting prevention measures.
Advance conversational bots are used in healthcare to help patients to guide them in case of any common diseases in the absence of the doctor.
One of the major use of ML is in Genomics and Genetics.
There are many medical chatbots that are helping patients to recover from mental illness and psychological effects.

Some of the Open Source data available are

- https://data.worldbank.org/
- https://github.com/freeCodeCamp/open-data
- https://www.kaggle.com/datasets
- https://www.data.gov/
- https://registry.opendata.aws/

This is my thought about recent year's machine learning trends. You can learn more about ML from the more informative articles available at CSEstack.

I am a highly active and passionate guy who loves trending technologies and wants to help others learn and use them to solve real-life problems. I am a tech come Management guy loves blogging, programming and marketing. I'm also a Developer student's club lead powered by Google developers.

I was planning to publish a research paper in Machine Learning and was confused in choosing the topic. This article was very helpful to me.
Thanks.

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End of Session

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