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(An Autonomous institution)

INFORMATION TECHNOLOGY

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Machine Learning is the Future

Our world is gradually evolving to become more technology reliant and one technologies expected to revolutionize the future is machine learning", From trival jobs to sophisticated services,everything today is using machine learning.

What is Machine Learning

Machine Learning is a method of teaching computers to make predictions based on some data it is a branch of artificial intelligence which automatically improves programs data.

   Ex: a machine learning system could be trained on email messages to learn to distinguish between spam and non-spam messages after learning it can be used to classify new email messages into spam and non-spam folders .

Machine learning is used in various applications . Some of the frequently used applications of machine learning are-

- Medical diagnosis
- Brain machine interfaces
- Cheminformatics
- Self-driving cars
- Stock market analysis
- A recommendation engine

Recommendation Engine could be used to recommend the right product to the right customer over time as more data is added and used by the algorithm the performance of the system improves.

Brief History

Artificial Intelligence(AI) was talked about even 25 years ago ,what has changed in the last two or three years why they have become suddenly a machine an economy become the new buzzword!

The biggest advances you're seeing is largely due to two things the techniques which we use in deep learning, deep neutral networks have been around for many years but early on they weren't that effective because we just didn't tell the computational power to run these algorithms , just for the past many years the computational power is dramatically increased so when we run deep learning on the latest computation and with the access to better data you get dramatic breakthroughs.

How Machine learning Helps Us

For example recently launched a google translate and this is a machine translation and using the deep learning systems the translation quality improvements just in the last year is bigger than what we have seen in the past ten years cumulatively,so it tells us that the ability for computers to do these kinds of tasks with image recognition,speck recognition, voice recognition.It's really hitting a tipping point so we are definitely in a "point of inflection"

Advantage in machine learning I think will make a big difference in many fields like diagnose diabetic retinopathy it's a condition which causes blindness but if we can detect it earlier we can completely cure it otherwise this causes blindness it's the fastest growing cause of blindness in the world, today we need advanced ophthalmologist to detect these conditions but using machine learning we can detect it pretty accurately so that a regular can detect these conditions

This is an early example of the kind of changes that will happen when we apply machine learning to all kinds of fields.

By
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DELIVERY DRONES

INTRODUCTION

The idea is about delivering the online products with the help of **DRONES**.
By pinning or sending the delivery address by admin to the drone then automatically it reaches to the specified location and then delivers the product.

DESCRIPTION ABOUT THE DELIVERY DRONES

The drone consists of Sensors and ability to take current locations and update, it also have camera to track the issues which are going around.It has battery in order to function. Special instructions are given to DRONE to hold/release Objects.

Admin will look after those kind of stuff....regarding the battery (by checking the conditions of the drone technically then it will be sent)

Even if the item is too delicate we can handle by packing it with necessary arrangements in a box made with sheets which protects (wheels of the drone is smooth and made with rubber in order to protect the items while placing)

Even if the item is light weight it doesn't matter, comparing to road transport the one which we implemented is less cost.

In terms of investment it will be invested only once, in other cases giving salaries to employees who are delivering the products will be quite expensive.

Here the main aspect is about online shopping, food order, so hope it will not exceeds 10 kgs
It sends the notification to admin in case of any technical issues.
It has the capacity to handle 5-10 kgs of weight to deliver the products .
After placing your order you will receive an OTP.
After the order is at your place, then enter the OTP to release the order at your place.
After receiving your order, for confirmation a notification is received from the platform where you have placed an order.

ADVANTAGES
- It reduces the efforts of a man.
- Takes less time.
- Reduces the cost.
- Investing only once.
- Utilized to transport packages, food or any other goods.

by
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III IT-A

Chromecast

Chromecast is a line of digital media players developed by Google. The devices, designed as small dongles, enable users with a mobile device or personal computer to initiate and control playback of Internet-streamed audio/visual content on a high-definition television or home audio system through mobile and web apps that support the Google Cast technology.

The first-generation Chromecast, a video streaming device, was announced on 24 July 2013, and made available for purchase on the same day in the United States.

The second-generation Chromecast , an audio-only model called Chromecast Audio were released in September 2015.A new model called Chromecast Ultra that supports 4K resolution and high dynamic range was released in November 2016.
Chromecast acts as a transmitter between your TV and your streaming video provider. It is an enlarged thumb drive-sized dongle that plugs into a modern television set's HDMI(High-Definition Multimedia Interface)port and allows you to stream media from your existing computer or mobile device through your home Wifi network and onto your TV screen.

The Chromecast functions is unique when compared to other streaming media solutions. It differs from other set-top boxes in some pretty key ways:

- It's the smallest device around.
- More importantly, your app is your remote.
- It's insanely cheap.
- There are some distinct disadvantages to using it:
- Many apps are still missing.
- You have no physical remote.
- It lacks a native interface.

by

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3rd yr IT-A.

SEARCH ENGINES MODIFIED…..

Search engines are programs that search documents for keywords or characters specified by user and returns a list of the documents where the keywords were found.

When most of the people talk about search engines, they really mean World Wide Web search engines. A search engine can tell you where a file or document is and it must be found. To find information on the hundreds of millions of Web pages that exist, a search engine employs special software robots, called "SPIDERS".

SPIDER: A spider builds a lists of the words found on theWeb sites. When a "SPIDER" is building its lists, the process is called Web crawling. Spiders links throughout the Internet, grabbing content from sites and adding it to search engine indexes. Spiders only can follow links from one page to another and from one site to another. This is the primary reason why links to your site (inbound links) are so important. Spiders find Web pages by following links from other Web pages, but users can also submit web pages directly to a search engine or directory and request a visit by their spiders. It can be useful to submit your URL straight to the various search engines as well; but spider-based engines will usually pick up your site regardless of whether or not you've submitted it to a search engine.

Search engines are not simple. They include incredibly detailed processes and methodologies, and are updated all the time.

All search engines go by this basic process when conducting search processes because there are differences in search engines, there are bound to be different results depending on which engine you use.

There are three basic stages for a search engine:

      1. Crawling – where content is discovered;

      2. Indexing- where it is analysed& stored in database.

      3. Ranking and retrieval- where a user query fetches a list of   relevant pages.

Crawling:

This involves scanning the site and getting a complete list of everything on there – the page title, images, keywords it contains, and any other pages it links to-–at a bare minimum.

To do this, a search engine uses a program that can be referred to as a 'crawler', 'bot' or 'spider' (each search engine has its own type) which follows an algorithmic process to determine which sites to crawl and how often.

As a search engine's crawler moves through your site it will also detect and record any links it finds on these pages and add them to a list that will be crawled later. This is how new content is discovered

Indexing:

      Once a search engine processes each of the pages it crawls, it compiles a massive index of all the words it sees and their location on each page. It is essentially a database of billions of web pages.

Indexing is the process of taking all of that data you have from a crawl, and placing it in a big database. Storing and sorting this information requires significant space.

Ranking & Retrieval:

Once a keyword is entered into a search box, search engines will check for pages within their index that are a closest match, score will be assigned to these pages based on an algorithm consisting of hundreds of different ranking signals.

These pages (or images & videos) will then be displayed to the user in order of score. So in order for your site to rank well in search results pages, it's important to make sure search engines can crawl and index your site correctly.

Page Rank (PR) is best-known algorithm used by Google Search to rank websites in their search engine results. Page Rank works by counting the number and quality of links to a page to determine a rough estimate of how important the website is.

Google, Yahoo, Bing etc are some of the famous Search Engines.

by

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III IT-B

LZW

 Lempel–Ziv–Welch (LZW) is a universal lossless data compression algorithm created by Abraham Lempel, Jacob Ziv, and Terry Welch. LZW compression is one of the Adaptive Dictionary techniques. The dictionary is created while the data are being encoded. So encoding can be done on the fly. The dictionary need not be transmitted. Dictionary can be built up at receiving end on the fly. Choosing a large dictionary size avoids overflow, but spoils compressions. A codebook or dictionary containing the source symbols is constructed. For 8-bit monochrome images, the first 256 words of the dictionary are assigned to the gray levels 0-255.

➢
NCODING

A dictionary is initialized to contain the single-character strings corresponding to all the possible input characters (and nothing else except the clear and stop codes if they're being used). The algorithm works by scanning through the input string for successively longer substrings until it finds one that is not in the dictionary. When such a string is found, the index for the string less the last character (i.e., the longest substring that *is* in the dictionary) is retrieved from the dictionary and sent to output, and the new string (including the last character) is added to the dictionary with the next available code. The last input character is then used as the next starting point to scan for substrings.
In this way, successively longer strings are registered in the dictionary and made available for subsequent encoding as single output values. The algorithm works best on data with repeated patterns, so the initial parts of a message will see little compression. As the message grows, however, the compression ratio tends asymptotically to the maximum.

This algorithm can also be implemented using a binary tree in the buffer window. This changes the time complexity to $O(log\ N)$ fir searches and comparisons from $O(N^2)$, like the normal form of the algorithm given below. This coupled with the new token scheme help make the algorithm faster and more space efficient.
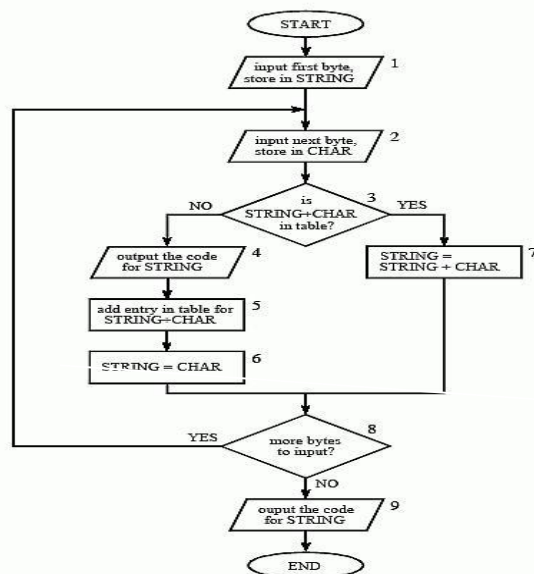

FIGURE 27-7
LZW compression flowchart. The variable, *CHAR*, is a single byte. The variable, *STRING*, is a variable length sequence of bytes. Data are read from the input file (box 1 & 2) as single bytes, and written to the compressed file (box 4) as 12 bit codes. Table 27-3 shows an example of this algorithm.

PLE FOR AN ENCODING PROCESS

Example 1: LZW Compression Step 1

BABAABAAA   P=A
           C=empty

ENCODER	OUTPUT	STRING	TABLE
output code	representing	codeword	string
66	B	256	BA

Example 1: LZW Compression Step 2

BABAABAAA   P=B
           C=empty

ENCODER	OUTPUT	STRING	TABLE
output code	representing	codeword	string
66	B	256	BA
65	A	257	AB

Example 1: LZW Compression Step 3

BABAABAAA   P=A
           C=empty

ENCODER	OUTPUT	STRING	TABLE
output code	representing	codeword	string
66	B	256	BA
65	A	257	AB
256	BA	258	BAA

Example 1: LZW Compression Step 4

BABAABAAA   P=A
           C=empty

ENCODER	OUTPUT	STRING	TABLE
output code	representing	codeword	string
66	B	256	BA
65	A	257	AB
256	BA	258	BAA
257	AB	259	ABA

Example 1: LZW Compression Step 5

BABAABAAA   P=A
           C=A

ENCODER	OUTPUT	STRING	TABLE
output code	representing	codeword	string
66	B	256	BA
65	A	257	AB
256	BA	258	BAA
257	AB	259	ABA
65	A	260	AA

Example 1: LZW Compression Step 6

BABAABAAA   P=AA
           C=empty

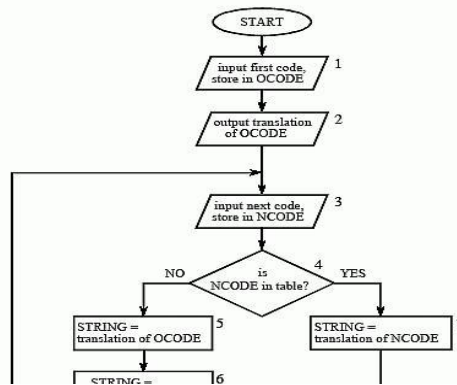| ENCODER	OUTPUT	STRING	TABLE
output code	representing	codeword	string
66	B	256	BA
65	A	257	AB
256	BA	258	BAA
257	AB	259	ABA
65	A	260	AA
260	AA		

The decoding algorithm works by reading a value from the encoded input and outputting the corresponding string from the initialized dictionary. At the same time it obtains the next value from the input, and adds to the dictionary the concatenation of the string just output and the first character of the string obtained by decoding the next input value.

The decoder then proceeds to the next input value (which was already read in as the "next value" in the previous pass) and repeats the process until there is no more input, at which point the final input value is decoded without any more additions to the dictionary.

In this way the decoder builds up a dictionary which is identical to that used by the encoder, and uses it to decode subsequent input values. Thus the full dictionary does not need be sent with the encoded data; just the initial dictionary containing the single-character strings is sufficient (and is typically defined beforehand within the encoder and decoder rather than being explicitly sent with the encoded data.)

The Decompression Algorithm


```
START
input first code,        1
store in OCODE
output translation       2
of OCODE
input next code,         3
store in NCODE
         is          4
NO    NCODE in table?   YES
STRING =            5        STRING =           7
translation of OCODE        translation of NCODE
STRING =            6
```

Example 2: LZW Decompression Step 1

<66><65><256><257><65><260>   Old = 65   S = A
                         New = 66   C = A

ENCODER OUTPUT	STRING TABLE	
string	codeword	string
B		
A	256	BA

Example 2: LZW Decompression Step 2

<66><65><256><257><65><260>   Old = 256   S = BA
                         New = 256   C = B

ENCODER OUTPUT	STRING TABLE	
string	codeword	string
B		
A	256	BA
BA	257	AB

Example 2: LZW Decompression Step 3

<66><65><256><257><65><260>   Old = 257   S = AB
                         New = 257   C = A

ENCODER OUTPUT	STRING TABLE	
string	codeword	string
B		
A	256	BA
BA	257	AB
AB	258	BAA

Example 2: LZW Decompression Step 4

<66><65><256><257><65><260>   Old = 65   S = A
                         New = 65   C = A

ENCODER OUTPUT	STRING TABLE	
string	codeword	string
B		
A	256	BA
BA	257	AB
AB	258	BAA
A	259	ABA

Example 2: LZW Decompression Step 5

<66><65><256><257><65><260>   Old = 260   S = AA
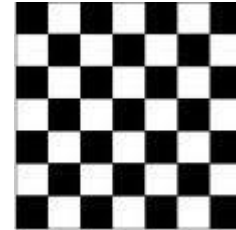   New = 260   C = A

ENCODER OUTPUT	STRING TABLE	
string	codeword	string
B		
A	256	BA
BA	257	AB
AB	258	BAA
A	259	ABA
AA	260	AA

IMAGE QUALITY VS IMAGE FILE SIZE GRAPH :
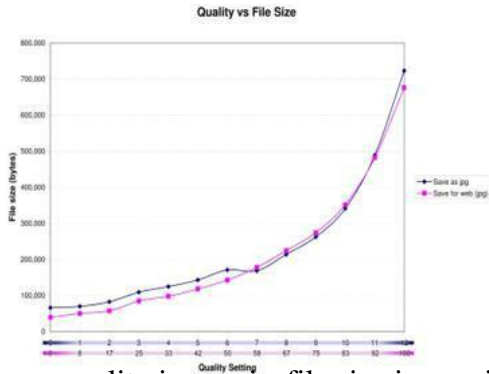
(image quality in x-axis, file size in y-axis)

CHECKER

BOARD IMAGE:

LZW compression works best when applied on monochrome images and text files that contain repetitive text/patterns.

For instance, Using LZW compression, a checker board image consisting of repetitive black and white patterns can be compressed upto 70% of its original file size.Thus a high compression ratio can be achieved.

Compression Ratio:

The **compression ratio** expresses the difference between the file size of an uncompressed image, and the file size of the same image when compressed. The compression ratio is equal to the size of the original image divided by the size of the compressed image. The compression ratio typically affects the picture quality. Generally, the higher the compression ratio, the poorer the quality of the resulting image. The tradeoff between compression ratio and picture quality is an important one to consider when compressing images.

$$Compression \ Ratio = \frac{Size \ of \ the \ original \ image}{Size \ of \ the \ compressed \ image}$$

Using LZW, 60-70 % of compression ratio can be achieved for monochrome images and text files with repeated data.

Compression/Decompression Speed :

Compression and decompression time is defined as the amount of time required to encode and decode a picture, respectively.

Compression/decompression speed depends on:

➢ The complexity of the compression algorithm

➢ The efficiency of the implementation of the algorithm

➢ The speed of the processor hardware

by
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IT   II Year

The Eye Gaze Communication system

INTRODUCTION

Imagine yourself being a intelligent, motivated, and working person in the fiercely competitive market of information technology, but just one problem You can't use your hands. Or you can't speak. How do you do your job? How do you stay employed? You can, because of a very good gift from computer Industry : The Eyegaze, a communication & control system you run with your eyes.

The Eyegaze System is a direct-select vision-controlled communication and control system. It was developed in Fairfax, Virginia, by LC Technologies, Inc.,

Who's using the Eyegaze System?

This system is mainly developed for those who lack the use of their hands or voice. Only requirements to operate the Eyegaze are control of at least one eye with good vision & ability to keep head fairly still. Eyegaze Systems are in use around the world. Its users are adults and children with cerebral palsy, spinal cord injuries, brain injuries, ALS, multiple sclerosis, brainstem strokes, muscular dystrophy, and Werdnig-Hoffman syndrome. Eyegaze Systems are being used in homes, offices, schools, hospitals, and long-term care facilities. By looking at control keys displayed on a screen, a person can synthesize speech, control his environment (lights, appliances, etc.), type, operate a telephone, run computer software, operate a computer mouse, and access the Internet and e-mail. Eyegaze Systems are being used to write books, attend school and enhance the quality of life of people with disabilities all over the world.

Memory deficits are a particular concern in considering the Eyegaze System for someone with a brain

injury. A user who can't remember from one day to the next how to operate the system may find it too difficult to use effectively.

How does the Eyegaze System work?

As a user sits in front of the Eyegaze monitor, a specialized video camera mounted below the monitor observes one of the user's eyes. Sophisticated image- processing software in the Eyegaze System's computer continually analyzes the video image of the eye and determines where the user is looking on the screen. Nothing is attached to the user's head or body.
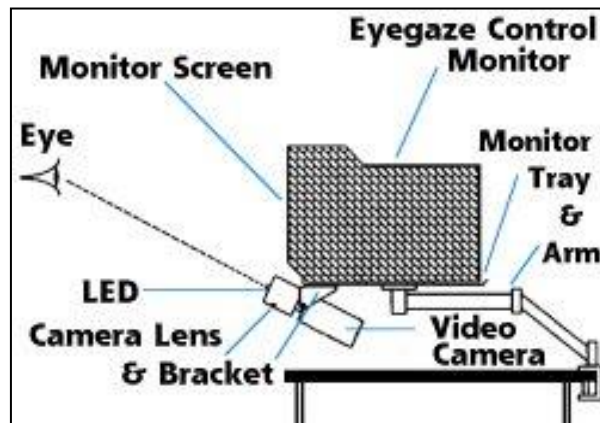
In detail the procedure can be described as follows: The Eyegaze System uses the pupil-center/corneal-reflection method to determine where the user is looking on the screen. An infrared-sensitive video camera, mounted beneath the System's monitor, takes 60 pictures per second of the user's eye. A low power, infrared light emitting diode (LED), mounted in the center of the camera's lens illuminates the eye. The LED reflects a small bit of light off the surface of the eye's cornea. The light also shines through the pupil and reflects off of the retina, the back surface of the eye, and causes the pupil to appear white. The bright-pupil effect enhances the camera's image of the pupil and makes it easier for the image processing functions to locate the center of the pupil. The computer calculates the person's gazepoint, i.e., the coordinates of where he is looking on the screen, based on the relative positions of the pupil center and corneal reflection within the video image of the eye. Typically the Eyegaze System predicts the gazepoint with an average accuracy of a quarter inch or better.

Prior to operating the eyetracking applications, the Eyegaze System must learn several physiological properties of a user's eye in order to be able to project his gazepoint accurately. The system learns these properties by performing a calibration procedure. The user calibrates the system by fixing his gaze on a small yellow circle displayed on the screen, and following it as it moves around the screen. The calibration procedure usually takes about 15 seconds, and the user does not need to recalibrate if he moves away from the Eyegaze System and returns later.

How to run the Eyegaze System?

A user operates the Eyegaze System by looking at rectangular keys that are displayed on the control screen. To "press" an Eyegaze key, the user looks at the key for a specified period of time. The gaze duration required to visually activate a key, typically a fraction of a second, is adjustable. An array of menu keys and exit keys allow the user to navigate around the Eyegaze programs independently.

Conclusion

Today, the human eye-gaze can be recorded by relatively unremarkable techniques. This thesis argues that it is possible to use the eye-gaze of a computer user in the interface to aid the control of the application. Care must be taken, though, that eye-gaze tracking data is used in a sensible way, since the nature of human eye-movements is a combination of several voluntary and involuntary cognitive processes.

The main reason for eye-gaze based user interfaces being attractive is that the direction of the eye-gaze can express the interests of the user-it is a potential porthole into the current cognitive processes-and communication

through the direction of the eyes is faster than any other mode of human communication. It is argued that eye-gaze tracking data is best used in multimodal interfaces where the user interacts with the data instead of the interface, in so-called non-command user interfaces.

by

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III IT-A

How to protect your GNU/Linux from remote attacks

Governments around the world are hacking into any computer that they can find. They are not just targeting large companies, but any computer that has information that they can sell. Is there anything on your computer that some hacker could sell for money? When was the last time you looked at your /var/log/auth.log file?

Checking
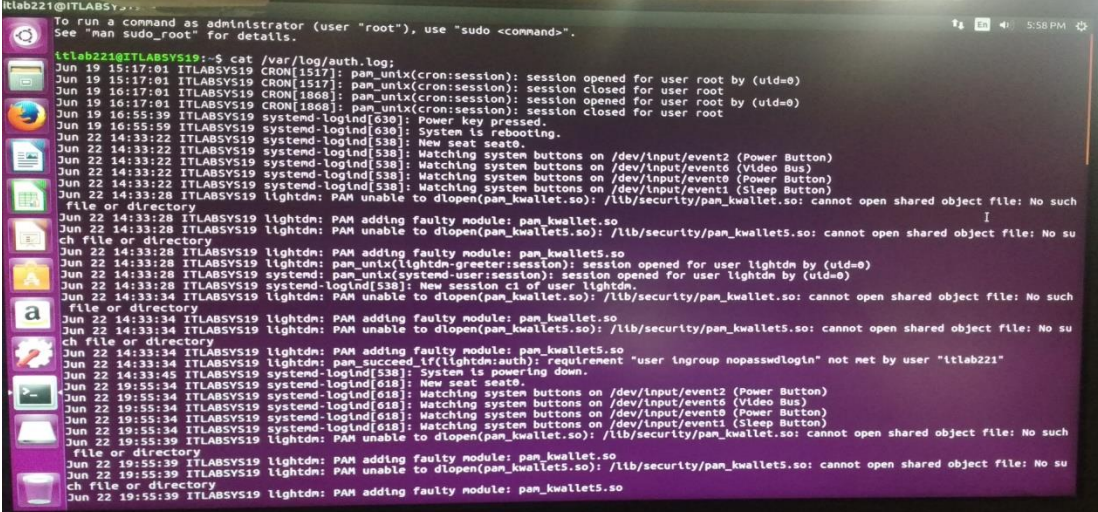
First of all, if you are behind a "NAT", it doesn't mean that you are safe. NAT is the mechanism where several computers share the same IP address; if that's the case, those computers are -- in theory -- invisible from the outside. While historically most attacks happen when computers have a public IP address, there is a lot that can go wrong even with NAT.

For entertainment value go ahead, open a terminal and type

Cat /var/log/auth.log.

The only entries in it should be readily identifiable logins by yourself, root, and CRON jobs. There may be other entries depending on what you've been doing, but what you shouldn't see any entries that show someone from some unidentifiable IP address, trying to login to your system. If you see a lot of them, then it's time to start worrying and do something about it.

For example I had:

 If you have a ssh daemon running so that you can login to your computer remotely, you'll see entries in your access log file (/var/log/auth.log on Debian type systems), showing that you logged in using your name, from some IP address.
you'll probably also see a *lot* of people trying to login from IP address that belong to companies from all over the world. They are running programs that go through every IP address on the net, looking for vulnerable computers.

All it takes, is a bit of distraction on your side, a weak password, and they are in.
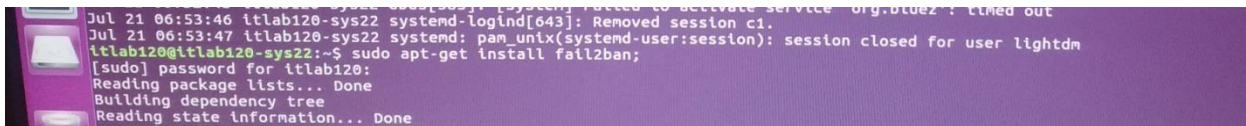
Protecting yourself

There are several steps needed to fully protect your computer. The simplest way is to install a program called Fail2ban. Most distros have this in their repositories. If not, you can find it easily with Google.

Fail2ban is simple to install and configure. Briefly, what Fail2ban does is detect if someone from any IP address tries to login more than a certain number of times, within a certain amount of time (default is 3 tries in 10 minutes) and bans that IP address for 10 minutes. That means that if that same person tries to login a 4th time, within 10 minutes, your computer will not even acknowledge the connection from that IP address and hopefully the hacker will give up.

Installing it

In a Debian-based system, you would install it with sudo apt-get install fail2ban. After the installation process, you will see something like this:

Configuring it

The default values are only a starting point. They assume that the person will give up and move on if they can't make a connection after a few tries after they've been banned. I have found from experience that the default times don't work very well. People from that same IP address will come back day after day or wait 30 minutes and try again. Luckily, those times can be changed very easily. My personal opinion would be to set the ban times to at least 30 minutes and maybe even 24 hours. There is an option to ban them forever.

However, that assumes that you don't fumble the ball and mistype your login from a remote location more than 3 times in 10 minutes. Otherwise, you'll be locked out of your own computer for 24 hours, unless you find another IP address to login from.

To change fail2ban's configuration, first make a copy of its config file:

```
sudo cp /etc/fail2ban/jail.conf /etc/fail2ban/jail.local
```

You can then go ahead and edit the file /etc/fail2ban/jail.local. The top part allows you to define times, and that's easy to understand.

When you change the configuration, remember to run sudo service fail2ban restart so that the changes take effect.

By typing as root iptables -L, you'll see that Fail2ban is working properly. Your firewall (iptables) should look something like this:

Chain INPUT (policy ACCEPT)					
target	prot opt source		destination		
fail2ban-apache-nohome	tcp -- anywhere		anywhere		multiport dports http,https

```
fail2ban-apache-overflows  tcp  --  anywhere          anywhere          multiport dports http,https

fail2ban-apache-noscript  tcp  --  anywhere          anywhere          multiport dports http,https

fail2ban-apache-multiport  tcp  --  anywhere          anywhere          multiport dports http,https

fail2ban-apache  tcp  --  anywhere          anywhere          multiport dports http,https

fail2ban-ssh  tcp  --  anywhere          anywhere          multiport dports ssh

ACCEPT     udp  --  anywhere          anywhere          udp dpt:domain

ACCEPT     tcp  --  anywhere          anywhere          tcp dpt:domain

ACCEPT     udp  --  anywhere          anywhere          udp dpt:bootps

ACCEPT     tcp  --  anywhere          anywhere          tcp dpt:bootps
```

This shows that Fail2ban is protecting both ssh and the Apache web server. With Fail2ban running, you'll see entries in your /var/log/auth.log file showing when an IP was banned and when it was unbanned.

Conclusion

Fail2ban will help immensely in preventing hackers from logging into your computer. However, this still allows them 3 tries, of which one may be successful.

<div align="right">

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III IT-A

</div>

TICKETS-RECOUP

INTRODUCTION

This App acts as an interface between the customers who are selling and buying tickets of any kind. App provides the Tickets at lower prices to the customers by looking at the particular area and type of tickets you need.

DESCRIPTION ABOUT THE APP

The tickets which are already booked by us and due to some external reasons if we are unable to attend it , can be sold to the anyone by just posting into the App whether it may be any kind of tickets like movie, bus, train, flight, events.

Here if you want to post your tickets into the app, you need to send the Tickets to the App which is an interface.Then the App verifies those details such that the ticket is valid or not by accessing the data from sources.

If the ticket is genuine then it allows the user to post that ticket in the App.
User can fix his own price i.e less than the original price he bought.
It provides the info which is only required like :
Number of tickets ,type and place.
For every post there will be an id.
User can login into that App , then pin his/her location and can search for the required tickets .

1. **MOVIE TICKETS :** After posting the ticket by customer1 ,then If customer2 wants to buy that ticket then he has to pay the required amount of money to the App by using the id.Then it changes the QR CODE and generates new QR CODE and send it to customer2.
2. **FLIGHT/TRAIN TICKETS :** While purchasing the tickets from customer2 , customer1 needs to fill the required data asked by those particular sources .Then it updates the customer2 's information and gives new BAR/QR code to the new one.
3. **EVENTS :** Even for any kind of events after purchasing the tickets it must update the info and generates new QR CODE.

The post is removed based on the time and date the ticket is going to be invalid .The movie tickets post is removed before show for which it is posted.
Train and flight tickets posts are removed before one day in order to get data updated in all the platforms where ever it is required.
Advantages

- This makes the user to get the tickets at lower price and gets benefited by both (buyer and seller).

- It makes us not to waste the seats in all the aspects.

by
CHINTHAKULA BHARATH
15B81A1221

Students Alumni Meet - 2k17

AdmITtee-Students Technical Competion-Valedictory

AdmITtee-Students Technical Competion

AdmITtee-Students Technical Competion

Workshop on R Programming

Workship on R Programming-Inaugural

Workshop on R Programming

Workshop on R programming

Students Alumni Meet 2k17

Workshop for IOT & Cloud Computing - Inaugural

Students Alumni Meet 2k17

Students Alumni Meet 2k17

Guest Lecture on Cloud Computing & Virtualization by Ashay Maheswar IIITH

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