K.S.RANGASAMY COLLEGE OF ARTS AND SCIENCE
(AUTONOMOUS)
K.S.R Kalvi Nagar, Tiruchengode-635 215, Namakkal-Dt
Tamilnadu, India

# i-SHARE

DEPARTMENT OF COMPUTER SCIENCE AND APPLICATIONS

SPECIAL EDITION
BY
III-BCA-D

# ISSUE 99
MONTHLY MAGAZINE

# Ishare

# Editorial

We would like to wholeheartedly thank our honorable Chairman, Secretary, Executive Director and Principal for their continuous encouragement and constant support for bringing out the magazine. We profoundly thank our Head of the Department for encouraging and motivating us to lead the magazine a successful one right from the beginning. Ishare serves as a platform for updating and enhancing upcoming technologies in Information and Communication. We are grateful to all the contributors to this magazine so far. The magazine has been sent to almost 60 Institutions in and around Tamilnadu. So far we have received feedbacks and appreciations from various Institutions.

We would be very pleased to receive your feedbacks. Please send your feedbacks to ishare@ksrcas.edu

By,

Editorial Board

# CONTENTS

# Recovery of .asd File in Word

Jaganathan. M

While working with Microsoft Word, it crashes along an important document that was worked on for more hours and for some reason not saved during that time. While a better question would be as to why the document, an important one at that, wasn't saved throughout that entire period, desperate times called for desperate measures. As it was, Microsoft Word saved the document as an ASD file; the trick was to get it to open in Word.

ASD files are automatic backups of the original file, so word setup the backup file, you need to find the original file or select the file and when the dialog box comes up for what to do with it, select to choose a program from the list, and select word.

It seems that Word only opens your .ASD from your AutoRecover file location**,** and it is tested many ways, including drag-drop into Word and it seems that Word doesn't want to open the .ASD from your desktop, C: drive or elsewhere, it only opens from your **AutoRecover file location** folder.

**If a file that is named DocumentName.asd appears in the details pane, follow these steps to open the document:**

To search for AutoRecover files, follow these steps:

1. Click Start, and then click Search.
2. Click All files and folders in Search Companion on the left side of Windows Explorer.
3. In the All or part of the file name: box, type *.ASD.
4. In the Look in box, click My Computer.
5. Click Search.

If you find any files that have the .asd extension, follow these steps:

A➔Start Word.

B➔ Perform one of the following actions:

1] In **Word 2007,** click the Microsoft Office Button, and then click Open.

2] In **Word 2003,** click Open on the File menu.

C➔ In the File of type list, click All Files.

D➔Locate and select the .asd file.

E➔ Right-click “Open With” and locate from programs where Microsoft Word is.

F➔ Open with Microsoft Word.

If Word finds the AutoRecover file, the Document Recovery task pane opens on the left side of the screen, and the missing document is listed as document name [Original] or as document name [Recovered]. If this occurs, perform one of the following actions:

1] In **Word 2007,** double-click the file in the Document Recovery task pane, click the Microsoft Office Button, click Save As, and then save the document as a .docx file.

2]In **Word 2003,** double-click the file in the Document Recovery task pane, click Save As on the File menu, and then save the document as a .doc file.

We have another ways to open files in words,

**It can be managed to open .ASD files in Word 2007 like this**:

1. Open Word 2007 and create a new document
2. Click **Word button -> Word Options -> Save**
3. See where your AutoRecover file location points to.

   Eg., **C:\Users*username*\AppData\Roaming\Microsoft\Word**

4. Copy paste the .asd file to that folder (if it already isn't)

5. Open the Open dialog, select "All files" on the bottom right corner and navigate to the folder you located in point 3.
6. Select the .asd file, cross your fingers and click Open to open it.

**It can be managed to open .ASD files in Word 2010 like this**:

1. Click on File.
2. Click Info -> Manage versions.
3. Click Recover unsaved documents.
4. Locate the folder where you have the .asd file.
5. Click on "All files" on the bottom right corner.
6. Select the .asd file and click Open to open it.

## Free Help in Internet for Computer Problems

D. Karthi

**Where do you go when you need help with a computer problem?**

One place to find answers is in one of the numerous technical forums on the Internet. These forums are community sites whose members help one another with technical problems. Some of these are major sites moderated by a group of experienced and knowledgeable experts and are excellent sources of free computer help. Here is a selection from the forums that is found most useful. Some are more specialized than others

but all are useful places to know about. They are listed in no particular order.

- **Tom's Hardware Forum** - As the name indicates, this forum is hardware-oriented but there are plenty of posts on other subjects, including the Windows operating system and video games.
- **Bleeping Computer Forum** - Good forum covering many areas of using a PC.
- **MajorGeeks Support Forums** - You may know MajorGeeks as a major freeware download site but it also has an active forum covering a variety of topics.
- **AnandTech Forums** - AnandTech is known for hardware reviews and this forum has a lot of hardware threads but there is plenty of discussion of software and other subjects.
- **Windows 7 Help Forums** - A lot of information about Windows 7 but there are other threads as well.
- **Windows 8 Forums** - This one is about using Windows 8 and 8.1.
- **Windows Secrets Lounge** - Forum of the well-known newsletter. The newsletter is commercial but the forum can be read by anybody and registration is free. Discussions on many subjects are here.
- **TechSpot Forums** - General computer topics of all sorts.
- **CNET Forums** - A wide variety of discussion from a major tech publisher

- **Tech Support Guy Forums** - Forum from our top-rated free online technical support service
- **Wilders Security Forums** - One of the best-known sites for security information.
- **Neowin Forums** - Forums on many technical subjects.

## Automated Screening – Speech Disorders

DhivyaMariChandrasekaran

For children with speech and language disorders, early-childhood intervention can make a great difference in their later academic and social success. But many such children -- one study estimates 60 percent -- go undiagnosed until kindergarten or even later.

An ongoing research on this, states that, the system analyzes audio recordings of children's performances on a standardized storytelling test, in which they are presented with a series of images and an accompanying narrative, and then asked to retell the story in their own words.

The screening will be done in a fully automated way using very simplistic tools. It is imagined that the storytelling task being totally done with a tablet or a phone. This will open up the possibility of low-cost screening for large numbers of children, and if it could be done, it would be a great boon to society.

## Subtle signals

The researchers evaluated the system's performance using a standard measure called area under the curve, which describes the tradeoff between exhaustively identifying members of a population who have a particular disorder, and limiting false positives. In the medical literature, a diagnostic test with an area under the curve of about 0.7 is generally considered accurate enough to be useful; on three distinct clinically useful tasks, the researchers' system ranged between 0.74 and 0.86.

To build the new system, machine learning is used, in which a computer searches large sets of training data for patterns that correspond to particular classifications -- in this case, diagnoses of speech and language disorders.

"Better diagnostic tools are needed to help clinicians with their assessments," says Green, himself a speech-language pathologist. "Assessing children's speech is particularly challenging because of high levels of variation even among typically developing children. You get five clinicians in the room and you might get five different answers."

Unlike speech impediments that result from anatomical characteristics such as cleft palates, speech disorders and language disorders both have neurological bases. But, Green explains, they affect

different neural pathways: Speech disorders affect the motor pathways, while language disorders affect the cognitive and linguistic pathways.

**Telltale pauses**

It is hypothesized that pauses in children's speech, were a source of useful diagnostic data. The researchers identified a set of 13 acoustic features of children's speech that their machine-learning system could search, seeking patterns that correlated with particular diagnoses. These were things like the number of short and long pauses, the average length of the pauses, the variability of their length, and similar statistics on uninterrupted utterances.

The children whose performances on the storytelling task were recorded in the data set had been classified as typically developing, as suffering from language impairment, or as suffering from speech impairment. The machine-learning system was trained on three different tasks: identifying any impairment, whether speech or language; identifying language impairments; and identifying speech impairments.

One obstacle the researchers had to confront was that the age range of the typically developing children in the data set was narrower than that of the children with impairments: Because impairments are comparatively rare, the researchers had to venture outside their target age range to collect data.

Thomas Campbell, a Professor of Behavioral and Brain Sciences at the University of Texas at Dallas and Executive Director of the University's Callier Center for Communication Disorder, says that, “The researchers' automated approach to screening provides an exciting technological advancement that could prove to be a breakthrough in speech and language screening of thousands of young children across the United States."

## Personal Information Detection – Brain Waves

Divya Bharathi. V

Cyber security and authentication have been under attack in recent months as, seemingly every other day, a new report of hackers gaining access to private or sensitive information comes to light. Just recently, more than 500 million passwords were stolen when Yahoo revealed its security was compromised. Securing systems has gone beyond simply coming up with a clever password that could prevent nefarious computer experts from hacking into your Facebook account. The more sophisticated the system, or the more critical, private information that system holds, the more advanced the identification system protecting it becomes.

Fingerprint scans and iris identification are just two types of authentication methods, once thought of as science fiction that are in

wide use by the most secure systems. But fingerprints can be stolen and iris scans can be replicated. Nothing has proven foolproof from being subject to computer hackers. "The principal argument for behavioral, biometric authentication is that standard modes of authentication, like a password, authenticate you once before you access the service," said Abdul Serwadda, a Cyber Security Expert and Assistant Professor in the Department of Computer Science at Texas Tech University. "Now, once you've accessed the service, there is no other way for the system to still know it is you. The system is blind as to who is using the service. So the area of behavioral authentication looks at other user-identifying patterns that can keep the system aware of the person who is using it. Through such patterns, the system can keep track of some confidence metric about who might be using it and immediately prompt for reentry of the password whenever the confidence metric falls below a certain threshold."

One of those patterns that are growing in popularity within the research community is the use of brain waves obtained from an electroencephalogram, or EEG. Several research groups around the country have recently showcased systems which use EEG to authenticate users with very high accuracy.

However, those brain waves can tell more about a person than just his or her identity. It could reveal medical, behavioral or emotional aspects of a person that, if brought to light, could be embarrassing or

damaging to that person. And with EEG devices becoming much more affordable, accurate and portable and applications being designed that allows people to more readily read an EEG scan, the likelihood of that happening is dangerously high. "The EEG has become a commodity application. For $100 you can buy an EEG device that fits on your head just like a pair of headphones," Serwadda said.

Now there are apps on the market, brain-sensing apps where you can buy the gadget, download the app on your phone and begin to interact with the app using your brain signals. That led us to think; now we have these brain signals that were traditionally accessed only by doctors being handled by regular people. Now anyone who can write an app can get access to users' brain signals and try to manipulate them to discover what is going on.

**Brain waves and Cyber Security**

Serwadda said the technology is still evolving in terms of being able to use a person's brain waves for authentication purposes. But it is a heavily researched field that has drawn the attention of several federal organizations. The National Science Foundation (NSF), funds a three-year project on which Serwadda and others from Syracuse University and the University of Alabama-Birmingham are exploring how several behavioral modalities, including EEG brain patterns, could be leveraged to augment traditional user authentication mechanisms. "There are no installations yet, but a lot of research is going on to see if EEG patterns

could be incorporated into standard behavioral authentication procedures," Serwadda said. Assuming a system uses EEG as the modality for user authentication, typically for such a system, all variables have been optimized to maximize authentication accuracy. A selection of such variables would include:

• The features used to build user templates.

• The signal frequency ranges from which features are extracted.

• The regions of the brain on which the electrodes are placed, among other variables.

**Motivation for discovery**

Serwadda's motivation for proving brain waves could be used to reveal potentially harmful personal information wasn't to improve the methods for obtaining that information. It's to prevent it.

To illustrate, he gives an analogy using fingerprint identification at an airport. Fingerprint scans read ridges and valleys on the finger to determine a person's unique identity, and that's it.

In a hypothetical scenario where such systems could only function accurately if the user's finger was pricked and some blood drawn from it, this would be problematic because the blood drawn by the prick could be used to infer things other than the user's identity, such as whether a person suffers from certain diseases, such as diabetes.

Currently, in the vast majority of studies on the EEG authentication problem, researchers primarily seek to outdo each other in

terms of the system error rates. They work with the central objective of designing a system having error rates which are much lower than the state-of-the-art. Whenever a research group develops or publishes an EEG authentication system that attains the lowest error rates, such a system is immediately installed as the reference point.

A critical question that has not seen much attention up to this point is how certain design attributes of these systems, in other words the kinds of features used to formulate the user template, might relate to their potential to leak sensitive personal information. If, for example, a system with the lowest authentication error rates comes with the added baggage of leaking a significantly higher amount of private information, then such a system might, in practice, not be as useful as its low error rates suggest. Users would only accept, and get the full utility of the system, if the potential privacy breaches associated with the system are well understood and appropriate mitigations undertaken.

## Brain-Inspired Device

Manorathi. M

Artificial Neural Networks (ANNs) exhibit learning abilities and can perform tasks which are difficult for conventional computing systems, such as pattern recognition, on-line learning and classification. Practical ANN implementations are currently hampered by the lack of

efficient hardware synapses, a key component that every ANN requires in large numbers.

In the study, published in Nature Communications, the Southampton research team experimentally demonstrated an ANN that used Memristor synapses supporting sophisticated learning rules in order to carry out reversible learning of noisy input data.

Memristors are electrical components that limit or regulate the flow of electrical current in a circuit and can remember the amount of charge that was flowing through it and retain the data, even when the power is turned off.

Lead author Dr Alex Serb, from Electronics and Computer Science at the University of Southampton, said: "If we want to build artificial systems that can mimic the brain in function and power we need to use hundreds of billions, perhaps even trillions of artificial synapses, many of which must be able to implement learning rules of varying degrees of complexity. Whilst currently available electronic components can certainly be pieced together to create such synapses, the required power and area efficiency benchmarks will be extremely difficult to meet -if even possible at all- without designing new and bespoke 'synapse components'.

"Memristors offer a possible route towards that end by supporting many fundamental features of learning synapses (memory storage, on-

line learning, computationally powerful learning rule implementation, two-terminal structure) in extremely compact volumes and at exceptionally low energy costs. If artificial brains are ever going to become reality, therefore, memristive synapses have to succeed."

Acting like synapses in the brain, the metal-oxide memristor array was capable of learning and re-learning input patterns in an unsupervised manner within a probabilistic winner-take-all (WTA) network. This is extremely useful for enabling low-power embedded processors (needed for the Internet of Things) that can process in real-time big data without any prior knowledge of the data.

It is shown that such hardware platforms can independently adapt to its environment without any human intervention and are very resilient in processing even noisy data in real-time reliably. This new type of hardware could find a diverse range of applications in pervasive sensing technologies to fuel real-time monitoring in harsh or inaccessible environments, a highly desirable capability for enabling the Internet of Things vision.

# Computers: Cache Management

Dharani. P

A year ago, researchers from MIT's Computer Science and Artificial Intelligence Laboratory unveiled a fundamentally new way of managing memory on computer chips, one that would use circuit space much more efficiently as chips continue to comprise more and more cores, or processing units. In chips with hundreds of cores, the researchers' scheme could free up somewhere between 15 and 25 percent of on-chip memory, enabling much more efficient computation.

The essential challenge posed by multicore chips is that they execute instructions in parallel, while in a traditional computer program, instructions are written in sequence. Computer scientists are constantly working on ways to make parallelization easier for computer programmers.

The initial version of the MIT researchers' scheme, called Tardis, enforced a standard called sequential consistency. Suppose that different parts of a program contain the sequences of instructions ABC and XYZ. When the program is parallelized, the instructions A, B, and C get assigned to core 1, and X, Y, and Z to core 2.

Sequential consistency doesn't enforce any relationship between the relative execution times of instructions assigned to different cores. It doesn't guarantee that core 2 will complete its first instruction -- X -- before core 1 moves onto its second -- B. It doesn't even guarantee that core 2 will begin executing its first instruction -- X -- before core 1 completes its last one -- C. All it guarantees is that, on core 1, A will execute before B and B before C; and on core 2, X will execute before Y and Y before Z.

## Planned disorder

But with respect to reading and writing data -- the only type of operations that a memory-management scheme like, Tardis is concerned with -- most modern chips don't enforce even this relatively modest constraint. A standard chip from Intel might, for instance, assign the sequence of read/write instructions ABC to a core but let it execute in the order ACB.

Relaxing standards of consistency allows chips to run faster. Let's say that a core performs a write operation, and the next instruction is a

read. Under sequential consistency, we have to wait for the write to finish. If we don't find the data in my cache, we have to go to the central place that manages the ownership of data."

Tardis uses chip space more efficiently than existing memory management schemes because it coordinates cores' memory operations according to "logical time" rather than chronological time. With Tardis, every data item in a shared memory bank has its own time stamp. Each core also has a counter that effectively time stamps the operations it performs. No two cores' counters need agree, and any given core can keep churning away on data that has since been updated in main memory, provided that the other cores treat its computations as having happened earlier in time.

**Division of labor**

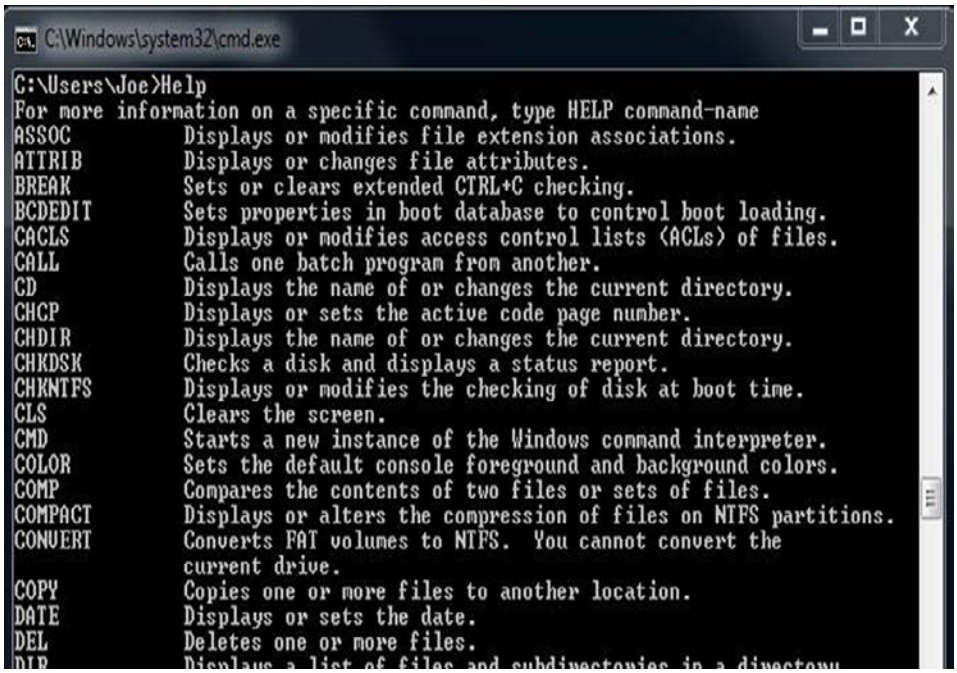
To enable Tardis to accommodate more relaxed consistency standards, the researchers simply gave each core two counters, one for read operations and one for write operations. If the core chooses to execute a read before the preceding write is complete, it simply gives it a lower time stamp, and the chip as a whole knows how to interpret the sequence of events.

As someone who works with an extensive distributed-computing system, it is believed that Tardis' greatest appeal is that it offers a unified framework for managing memory at the core level, at the level of the

computer network, and at the levels in between. Today, we have caching in microprocessors, we have the DRAM [dynamic random-access memory] model, and then we have storage, which used to be disk drives. "So there was a factor of maybe 100 between the time it takes to do a cache access and DRAM access, and then a factor of 10,000 or more to get to disk. With flash [memory] and the new nonvolatile RAMs coming out, there's going to be a whole hierarchy that's much nicer. What's really exciting is that Tardis potentially is a model that will span consistency between processors, storage, and distributed file systems."

## CMD Commands

Jaganathan. M



1. **ipconfig**

This is the top most command for seeing the IP address, subnet mask and default gateway which also includes display and flush DNS cache, re-register the system name in DNS. This will be the most useful tool for viewing and troubleshooting TCP/IP problem.

- To view IP ,subnet mask address : ***ipconfig***
- To view all TCP/IP information, use: ***ipconfig /all***
- To view the local DNS cache, use: ***ipconfig /displaydns***
- To delete the contents in the local DNS cache, use: ***ipconfig /flushdns***

2. **systeminfo**

Have a need to display operating system configuration information for a local or remote machine, including service pack levels? Then systeminfo is the tool to use. When I need to connect to a system that I am not familiar with, this is the first tool I run. The output of this command gives me all the info I need including: host name, OS type, version, product ID, install date, and boot time and hardware info (processor and memory). Also knowing what hot fixes are installed can be a big help when troubleshooting problems. This tool can be used to connect to a machine remotely using the following syntax:

***SYSTEMINFO /S system /U user***

### 3. tasklist and taskkill

If you work with Task Manager (ctrl+alt+del) ,you can easily understand this. Task list is list of task which are running on windows currently. If you open any application, it will be added to task.

To List the Tasks type in cmd:

***tasklist***

This will show the list of task which is running process

To stop the Process or task, there are two methods.

We can kill the task using its Image Name as follows

***tasklist /im notepad.exe***

Using Process Id:

We can stop the process using its process id as follows:

***tasklist /pid 1852***

### *4.* type

type is used to read the text document in command prompt . You can read multiple text in continuously

***type filename.txt***

**5. netstat**

Need to know who (or what) is making a connection to your computer? Then netstat is the tool you want to run. The output provides valuable information of all connections and listening ports, including the executable used in the connections. In addition to the above info, you can view Ethernet statistics, and resolve connecting host IP Addresses to a fully qualified domain name. I usually run the netstat command using the

- ***-a*** (displays all connection info),
- ***-n*** (sorts in numerical form),
- ***-b*** (displays executable name) switches.

**6. net command**

Although this tool is more known as a command, the net command is really like a power drill with different bits and is used to update, fix, or view the network or network settings. It is mostly used for viewing (only services that are started), stopping and starting services:

- ***net stop server***
- ***net start server***
- ***net start*** (display running services)

and for connecting (mapping) and disconnecting with shared network drives:

- ***net use m: \myservershare name***
- ***net use m: \myservershare name /delete***

Other commands used with net command are, accounts (manage user accounts), net print (manage print jobs), and net share (manage shares).

Below are all the options that can be used with the net command.

[ ACCOUNTS | COMPUTER | CONFIG | CONTINUE | FILE | GROUP | HELP |HELPMSG | LOCALGROUP | PAUSE | PRINT | SESSION | SHARE | START |STATISTICS | STOP | TIME | USE | USER | VIEW ]

**7. – nslookup –**

With the Internet, DNS (Domain Name Service) is the key for allowing us to use friendly names when surfing the web instead of needing to remember IP Addresses. But when there are problems, nslookup can be a valuable tool for testing and troubleshooting DNS servers. Nslookup can be run in two modes:

- **interactive**
- **noninteractive**

Noninteractive mode is useful when only a single piece of data needs to be returned. For example, to resolve google.com, to use the interactive mode, just type nslookup at the prompt. To see all the available options, type "help" while you are in interactive mode.

Don't let the help results intimidate you. Nslookup is easy to use. Some of the options I use when troubleshooting are:

- ***set ds*** (displays detailed debugging information of behind the scenes communication when resolving an host or IP Address).
- ***set domain*** (sets the default domain to use when resolving, so you don't need to type the fully qualified name each time).
- ***set type*** (sets the query record type that will be returned, such as A, MX, NS)
- ***server NAME*** (allows you to point nslookup to use other DNS servers than what is configured on your computer)

To exit out of the interactive mode, type "**exit".**

**8. – ping and tracert –**

These tools can be helpful with connectivity to other systems. Ping will test whether a particular host is reachable across an IP network, while tracert (traceroute) is used to determine the route taken by packets across an IP network.

To ping a system just type at the prompt: ping www.google.com. By default, ping will send three ICMP request to the host and listen for ICMP “echo response” replies. Ping also includes switches to control the number of echo requests to send (-n ), and to resolve IP addresses to hostname (-a ).

To use tracert, type at the prompt: **tracert www.google.com**. You can force tracert to not resolve address to hostnames by using the -d switch, or set the desired timeout (milliseconds) for each reply using -w switch.

**9. – gpresult –**

Used mostly in environments that implement group policies and gpresults. Group Policy Results verifies all policy settings in effect for a specific user or computer. The command is simple to use, just enter gpresults at the prompt. It can also be used to connect to computers remotely using the /S and /U switches.

**10. – netsh –**

Without a doubt the most powerful command line tool available in Windows. Netsh is like the swiss army knife for configuring and monitoring Windows computers from the command prompt. It capabilities include:

- Configure interfaces
- Configure routing protocols

- Configure filters
- Configure routes

Configure remote access behavior for Windows-based remote access routers that are running the Routing and Remote Access Server (RRAS). Service display the configuration of a currently running router on any computer. Some examples of what you can do with netsh:

Enable or disable Windows firewall:

- ***netsh firewall set opmode disable***
- ***netsh firewall set opmode disable***

Enable or disable ICMP Echo Request (for pinging) in Windows firewall:

- ***netsh firewall set icmpsetting 8 enable***
- ***netsh firewall set icmpsetting 8 disable***

## IT Career

Nirmala. M

IT jobs fall within the full spectrum of computer technology and business. Because the field of information technology covers such a

broad range of job roles, it's a good idea to first explore the differences in the career paths you can take in IT, such as:

- A computer support specialist (which requires only a certificate or an associate degree, and sometimes a bachelor's degree), or
- Computer programmer, software developer, or various other IT careers which usually require a bachelor's degree (sometimes an associate degree on an exception basis)
- Then you'll need to take a closer look at the qualities that are essential to those considering a career in IT – and valued by those who make IT hiring decisions. As we spotlight the essential qualities for a successful career in IT, you learn how to assess where you career goals and interests fit, and determine what level of education you need for the IT roles that interest you most.

## Information Technology - Specialists

### Computer Programmers

Programmers write code for computers and turn software designs into reality.

Computer programmers usually earn a Bachelor's in Computer Science; some, however, are hired with an associate degree. In college, most programmers learn only a few computer languages, but develop the skills necessary to learn new computer languages. As a result, computer

programming requires a commitment to lifelong learning in order to stay current with changing technology.

### Computer Systems Analysts

Systems Analysts evaluate a company's current computer systems and business processes at a detailed level. They will make recommendations for more efficient and effective business and IT usage and interaction. Typically they act as a bridge between business and IT.

**Education**: Computer Systems Analysts must have a bachelor's degree, usually a Bachelor's in Computer or Information Science. Other bachelor's degrees, such as those in business or liberal arts are considered if the individual is familiar with computers and programming.

### Computer and Information Systems Managers (IT managers)

IT Managers direct teams and run projects for computer related needs in an organization. In addition, they help identify IT goals and implement required computer systems in order to meet those goals. **Education:** Typically have a Bachelor's in Information Science or a Bachelor's in Computer Science. Many IT managers also have a graduate degree such as a Master's in Information Science.

- **Database Administrators**

Database Administrators are software specialists who focus on the applications and services responsible for organizing and storing data (like financial records or shipping addresses or health records) for an organization. They also ensure the security of data and its availability to intended users.

**Education:** Usually, Database Administrators must possess a Bachelor's in Information or Computer Science.

- **Information Security Analysts, Web Developers, Computer Network Architects**

All three types of these IT professionals use Information Technology (IT) to move an organization closer to its business goals. Security analysts are in charge of keeping information safe from cyber-attacks. Web developers help provide the look and feel of an organization to others. Network architects are in charge of creating the internal networks that all employees of an organization use.

**Education:** Typically, a Bachelor's in Computer Science or Information Science is required. Knowing a variety of programming languages is also important.

- **Network and Computer Systems Administrators**

SysAdmins are in charge of the day-to-day functioning of a company's computer network including organizing, installing, and supporting computer systems, networks, intranets, and other data communication systems.

**Education:** Typically a Bachelor's in Computer Science or Information Systems is required. Sometimes, however, you can be hired with an associate degree or professional certification if you possess related work experience.

### Software Developers

Software Developers create the applications (software) that run on computers or other IT devices like smart phones. Some software developers focus more on the underlying computer systems that run devices or networks.

**Education**: In general, a Bachelor's in Computer Science is required, as well as strong programming skills.

## Important Qualities

Here are some of the important skills and qualities that you will need to develop in order to be successful in information technology. Get real experience, and earn credit, by taking college courses that focus on these skills - and are usually required for a degree in IT.

- Good communication skills

- Organized
- Follow and implement a plan
- Problem solving
- Strong analytical skills
- Ability to focus for a long period of time

If you answer yes to most of these questions, there's a good chance that a career in information technology is the right match for your skills – and that you do have what it takes to earn your degree in IT.

## IR Blaster

Kalaiarasan. R

**What is IR?**

An **infrared blaster** (or **IR blaster**) is a device that emulates an infrared remote control to autonomously control a device that is normally controlled only by remote control key presses. The most common use of an IR blaster is to allow a recording device such as a DVR or VCR to change the channel on an external tuner such as a cable box or satellite receiver. This way, the recording device can automatically select the correct channel to record before starting the

recording process. Another common use is to extend infrared signals in order to place remote controlled products behind closed doors.

What is IR in mobile phone?

**IR** wireless is the use of wireless technology in devices or systems that convey data through infrared (**IR**) radiation. Infrared is electromagnetic energy at a wavelength or wavelengths somewhat longer than those of red light.

Smartphone that have IR blasters built-in:

**2004**

- Sony Ericsson P900 and P910

**2005**

- Audiovox PPC-6700

**2007**

- Nokia N95
- Nokia 5700 Xpress Music

**2013**

- HTC One (M7), One Max
- LG G2, G Flex, G Pro Lite
- LG Optimus F6, Optimus G Pro, Optimus L9 II

- Samsung Galaxy Note 3, Galaxy S4, Galaxy S4 Mini, Galaxy S4 Active, Galaxy Mega, Galaxy J
- Sony Xperia Z , Z1 (Japanese version only), ZL (Discontinued)
- ZTE Nubia Z5S

**2014**

- HTC One (M8)
- Huawei Honor 6, Honor 6 Plus
- LG G Pro 2, G2 Mini, G3, G3 S (Vigor), L90, G Vista, Volt
- Samsung ATIV SE, Galaxy Note 3 Neo, Note 4, Note Edge, S5, S5 Active, S5 Duos, S5 Mini, S6, S6 Edge
- Xiaomi Mi 4
- ZTE Grand Memo II LTE, X Max, Nubia X6, Nubia Z7, Nubia Z7 Max

**2015**

- HTC One (M9), M9+
- Huawei Honor 7
- LG G Flex 2, G4, V10
- Medion P10341 (ALDI)
- Oppo Mirror 5, 5s
- Samsung Galaxy S6, S6 Active
- Xiaomi Redmi Note 2, Mi 4C, Redmi Note 3, Redmi 3

- ZTE Grand X Max+, Nubia Z9
- Gionee Marathon M5
- Letv Le 1s, LeMax
- Lenovo Vibe X3
- Panasonic P55 Novo

**2016**

- Huawei Honor 8
- LG G5, V20
- Ulefone Power, Vienna
- Xiaomi Mi 5, 4s
- Xiaomi Redmi Note 3 Pro, Note 4, Max
- LeTV le 1s, Max
- Huawei P9 Plus
- LeEco Le 2, Le 2 Pro, Le Max 2
- Lenovo Vibe X3

**List of Phones with IR Blaster & Fingerprint Sensor**

IR blaster and Fingerprint Sensor are the two most exciting features that are gaining too much popularity and craze among the current generation of Smartphone users. Normally you can either have IR Blaster or Fingerprint sensor in a Smartphone but it is very hard to find both these features in a single Smartphone, but there are few phones out there that are equipped with both these new and prominent features

and here I am going to tell you about these phones, but first we briefly look at both these features.

**IR Blaster –** IR Blaster is a feature that turns your phone in a Universal Remote and by which you can control devices like, TV, Music Player, AC, Projectors or any other device that requires an infrared remote to operate. IR Blaster is hardware feature as it requires an Infrared Senor or Infrared LED for its working. For using IR Blaster an App is also required which can give commands to the devices using IR LED. Generally all the IR Blaster phones comes with their own in-built IR Blaster App but for Android phones you can also download and use other third party Infrared Blaster Apps from Google Play.

**Fingerprint Scanner –** Finger Sensor is a security feature that locks and unlocks your phone or individual applications so that no one else can use it. It is also called Fingerprint Scanner or Fingerprint Reader. The Fingerprint Sensor is usually located on the back or rear side of your phone, usually below the camera. When you put your finger on it then it scans it and if a match is found then the phone or the app will get unlocked.

***List of Phones with both Infrared Blaster & Fingerprint Sensor***

Here is the complete list of Smartphone that are equipped with both IR Blaster and Fingerprint Sensor features.

HTC One M9+, One ME

Huawei Honor 7, P9 Plus, Honor 8

LeEco Le 1s, Le Max, Le Max 2, Le 2, Le 2 Pro

LG G5

Lenovo Vibe X3

Samsung Galaxy Note 4, S5, S6, S6 Edge+

Xiaomi Mi 5, Max

Xiaomi Redmi 3S Prime, Pro, 3 Pro

## Language – Speedups on Big Data Problems

Sanjay. K


In today's computer chips, memory management is based on what computer scientists call the principle of locality: If a program needs a

chunk of data stored at some memory location, it probably needs the neighboring chunks as well.

But that assumption breaks down in the age of big data, now that computer programs more frequently act on just a few data items scattered arbitrarily across huge data sets. Since fetching data from their main memory banks is the major performance bottleneck in today's chips, having to fetch it more frequently can dramatically slow program execution.

Researchers from MIT's Computer Science and Artificial Intelligence Laboratory (CSAIL) are presenting a new programming language, called Milk, that lets application developers manage memory more efficiently in programs that deal with scattered data points in large data sets.

In tests on several common algorithms, programs written in the new language were four times as fast as those written in existing languages. But the researchers believe that further work will yield even larger gains.

The reason that today's big data sets pose problems for existing memory management techniques, explains Saman Amarasinghe, a Professor of Electrical Engineering and Computer Science, is not so much that they are large as that they are what computer scientists call

"sparse." That is, with big data, the scale of the solution does not necessarily increase proportionally with the scale of the problem.

"In social settings, we used to look at smaller problems," Amarasinghe says. "If you look at the people in this [CSAIL] building, we're all connected. But if you look at the planet scale, I don't scale my number of friends. The planet has billions of people, but I still have only hundreds of friends. Suddenly you have a very sparse problem."

Similarly, Amarasinghe says, an online bookseller with, say, 1,000 customers might like to provide its visitors with a list of its 20 most popular books. It doesn't follow, however, that an online bookseller with a million customers would want to provide its visitors with a list of its 20,000 most popular books.

## Thinking locally

Today's computer chips are not optimized for sparse data -- in fact, the reverse is true. Because fetching data from the chip's main memory bank is slow, every core, or processor, in a modern chip has its own "cache," a relatively small, local, high-speed memory bank. Rather than fetching a single data item at a time from main memory, a core will fetch an entire block of data. And that block is selected according to the principle of locality.

It's easy to see how the principle of locality works with, say, image processing. If the purpose of a program is to apply a visual filter to an

image, and it works on one block of the image at a time, then when a core requests a block, it should receive all the adjacent blocks its cache can hold, so that it can grind away on block after block without fetching any more data.

But that approach doesn't work if the algorithm is interested in only 20 books out of the 2 million in an online retailer's database. If it requests the data associated with one book, it's likely that the data associated with the 100 adjacent books will be irrelevant.

Going to main memory for a single data item at a time is woefully inefficient. "It's as if, every time you want a spoonful of cereal, you open the fridge, open the milk carton, pour a spoonful of milk, close the carton, and put it back in the fridge," says Vladimir Kiriansky, a Ph.D student in Electrical Engineering and Computer Science.

## Batch processing

Milk simply adds a few commands to OpenMP, an extension of languages such as C and FORTRAN that makes it easier to write code for multicore processors. With Milk, a programmer inserts a couple additional lines of code around any instruction that iterates through a large data collection looking for a comparatively small number of items. Milk's compiler -- the program that converts high-level code into low-level instructions -- then figures out how to manage memory accordingly.

With a Milk program, when a core discovers that it needs a piece of data, it doesn't request it -- and a cacheful of adjacent data -- from main memory. Instead, it adds the data item's address to a list of locally stored addresses. When the list is long enough, the entire chip's cores pool their lists, group together those addresses that are near each other, and redistribute them to the cores. That way, each core requests only data items that it knows it needs and that can be retrieved efficiently.

That's the high-level description, but the details get more complicated. In fact, most modern computer chips have several different levels of caches, each one larger but also slightly less efficient than the last. The Milk compiler has to keep track of not only a list of memory addresses but also the data stored at those addresses, and it regularly shuffles both around between cache levels. It also has to decide which addresses should be retained because they might be accessed again, and which to discard. Improving the algorithm that choreographs this intricate data ballet is where the researchers see hope for further performance gains.

# Best Apps for your Brain

Velumani. P

## 1. Lumosity

This popular app is split into sessions of three games tailored to your goals: memory, attention, problem solving, processing speed or flexibility of thinking. The games are played against the clock and change every time. Developers say just one session a day can improve mental skills and users can track progress and compare performance with others.

## 2. CogniFit Brain Fitness

Improve cognitive abilities, such as memory and concentration, with sleek, fun and addictive games designed by neuroscientists. Users can track progress and access insights about overall brain health. Competitive players can challenge friends, too. After an initial quiz, the app adapts each game's difficulty to your profile and gives you recommendations based on your results. Developers found that users saw improvement by spending at least 20 minutes, two to three times a week, playing the games.

**3. Personal Zen**

Players follow two animated characters, one of which looks calm and friendly while the other looks angry, as they burrow through a field of rustling grass. This game, developed by Dr. Dennis and researchers from Hunter College and the City University of New York, reduces anxiety by training your brain to focus more on the positive and less on the negative. “The habit of thinking about the world in a more positive light — like looking for a silver lining in a bad situation — is one of the key ways we can promote our own resilience in the face of adversity,” says Dr. Dennis. Even a single session of play can build resilience over several hours. She suggests using the app right before a stressful event, but 10 minutes a day will help build more enduring positive effects.

**4. Brain Trainer Special**

Like Lumosity, this Android app contains games that have you memorizing letter sequences, phone numbers and solving assorted math problems to keep your mind in tip-top shape. Difficulty levels range from easy to brain-tingling hard. (Free; available on Google Play)

**5. Brain Fitness Pro**

Brain Fitness Pro employs a series of memory training exercises to increase focus, memory and problem-solving skills. Developers say that intensive working memory training dramatically increases attention and

general cognitive skills and that these benefits remain long term. ($4; available for iOS)

**6. Happify**

Train your brain to be happier? Yep, research shows that some activities help build your ability to conquer negative thoughts, show gratitude, cope with stress, and empathize — all essential ingredients for a fuller, happier life. It uses the fundamentals of positive psychology. It focuses on the strengths and virtues that enable individuals to create fulfilling lives, the app's quizzes, polls and gratitude journal — combined with a positive community — gradually teach life-changing habits. The goal is to build these skills and keep users smiling all day. (Free; available for iOS)

**7. Positive Activity Jackpot**

This app was originally developed for service members returning from combat with high risk for post-traumatic stress disorder. It uses augmented reality with an Android phone's GPS to find nearby activities and diversions for someone coping with depression. If you cannot make up your mind what to do, "pull the lever" and let the app's jackpot function make the choice for you. PAJ is based on a form of behavioral therapy called pleasant event scheduling, which encourages a daily schedule of enjoyable activities to improve moods and overcome despondent thoughts. (Free; available on Google Play)

**8. Fit Brains Trainer**

More than 360 unique games and puzzles aimed at stretching and improving your mental agility lead users through various tasks. Sessions get harder as you improve and will always challenge you and provide a solid brain workout. Keep track of your progress and performance tools and the program offers training recommendations for best results. (Free; available on iOS and on Google Play)

**9. Eidetic**

Eidetic uses a technique called spaced repetition to help you memorize anything from important phone numbers to interesting words or facts. It works differently from typical brain training apps by using items that have meaning and context, like your beau's phone number, bank account details, or a new quote worth reciting. Notifications remind you when it's time to test yourself and spaces out tests over time to make sure you retain the information in long-term memory. (Free; available on iOS)

**10. ReliefLink**

Dr. Kaslow developed this award-winning app for suicide prevention but it can be used as a general mood tracker. "It's like MyFitnessPal in that you can track all sorts of things that are relevant to your mental health," says Dr. Kaslow. It also includes unique coping methods, such as voice-recorded mindfulness and relaxation exercises,

or relaxing music. The map locator pinpoints nearby therapists, support groups and mental health treatment facilities, too, in case you ever need to talk to a professional.

## Work at Computer – Health Tips

Vanmathi. K

You might be thinking this sounds good in theory… but how do you translate your seated computer job into a standing one? It's easier than you might think. For starters, check out these essential tips for computer workers:

**1. <u>Stand Up</u>**

If you're lucky, your office may be one that has already implemented sit-stand workstations or even treadmill desks. Those who used such workstations easily replaced 25 percent of their sitting time with standing and boosted their well-being (while decreasing fatigue and appetite).

But if you don't have a specially designed desk, don't let that stop you. Prop your computer up on a stack of books, a printer, or even an overturned trash can and get on your feet.

## 2. Get Moving

Why simply stand up when you can move too? The treadmill desk, which was invented by Dr. Levine, is ideal for this, but again it's not the only option. You can walk while you're on the phone, walk to communicate with others in your office (instead of e-mailing), and even conduct walking meetings.

## 3. Monitor Your Screen Height

Whether you're sitting or standing, the top of your computer screen should be level with your eyes, so you're only looking down about 10 degrees to view the screen. If it's lower, you'll move your head downward, which can lead to back and neck pain. If it's higher, it can cause dry eye syndrome.

## 4. Imagine Your Head as a Bowling Ball

Your head must be properly aligned to avoid undue stress on your neck and spine. Avoid craning your head forward, holding it upright instead. And while you're at it, practice chin retractions, or making a double chin, to help line up your head, neck, and spine.

## 5. Try the "Pomodoro Technique"

You know those little tomato-shaped (pomodoro is Italian for tomato) timers? Wind one up to 25 minutes (or set an online calculator).

During this time, focus on your work intensely. When it goes off, take 5 minutes to walk, do jumping jacks, or otherwise take a break from your work. This helps you to stay productive while avoiding burnout.

# 5G Wireless

Sowndharya. G

The Internet of Things, streaming virtual reality and many other much-hyped technologies cannot exist without a complete rethinking of how mobile devices get online.

Mobile gadgets may have changed the way people live and work, but today's once-groundbreaking ability to stream live video to a smartphone will seem pretty blasé compared with what the next generation of wireless technology promises. The tech's so-called fifth generation, or 5G, is expected to connect billions of machines—kitchen appliances, medical devices and automobiles, to name a few—to one another and the Web, creating the much-hyped Internet of Things. And 5G touts speeds up to 100 times faster than current networks, which could mean downloading a full-length high-definition movie onto a smartphone in seconds rather than minutes. Plans for tomorrow's wireless networks likewise include the ability to stream online virtual reality content without disorienting interruptions caused by data bottlenecks.

**The main shortcoming of 5G**: It does not yet exist. That has gadget makers, wireless network providers and government agencies

scrambling to create a road map for the wireless future they have been promising by the early 2020s. Some progress is being made but there is a long way to go. In July the Federal Communications Commission opened up new, higher-frequency areas of the radio spectrum for wireless communications to accommodate predicted increases in data traffic from 5G mobile devices. The previous generation of wireless—4G—has prompted a 4,000-fold increase in data traffic in the past decade with no signs of slowing. The part of spectrum between 30 megahertz and 3 gigahertz (in which much wireless communications currently takes place) offers little room for the coming 5G explosion, clogged as it is with radio and TV broadcasts as well as 3G and 4G cellular communications, radar, satellites and radios used by public safety workers.

Proponents of 5G are pushing for a further widening of the legally available spectrum, which would let companies shift wireless traffic to less-crowded, higher-frequency ranges. Those spectrum bands would enable the use of millimeter waves that could deliver faster, higher-quality video and multimedia content. This “greenfield” spectrum was previously thought to be unusable for mobile devices because their antennas were not made to not pick up those high-frequency signals, says Doug Brake, a Telecom Policy Analyst at the Information Technology & Innovation Foundation, a public policy think tank.

New antenna designs by companies including telecommunications equipment maker Qualcomm will enable mobile devices to send and receive signals in higher-frequency ranges. Antenna size is inversely proportional to frequency size—higher-frequency signals require smaller antennas. As a result, device makers will be able to place multiple antennas throughout their 5G devices to improve reception and try to make up for millimeter waves' weaker signal strength.

In addition to annexing more radio spectrum and rethinking antenna design, 5G's success will depend on the growing use of portable cellular base stations called small cells. Small cells come in a variety of sizes—some as small as a television remote-control device—and are used to boost cell tower signals, creating better coverage indoors and in remote areas. Small cells will make it possible for millimeter waves, which are easily blocked by buildings and foliage and have a transmission range measured in meters rather than kilometers, to relay data from one cell to another and cover longer distances. The FCC furthered its efforts to prepare for 5G last month when it loosened rules to make it easier for wireless providers and building owners to install small cells on utility poles, in shopping malls and older buildings, even ones designated as historic.

The two largest U.S. telecom companies, Verizon and AT&T, have begun limited 5G testing at a handful of sites. Additional tests will roll out over the next decade as part of the Obama administration's recently

announced $400-million Advanced Wireless Research Initiative led by the National Science Foundation (NSF). The initiative will create four testing sites in cities to see firsthand how small cells, millimeter waves and other essential components of 5G might work in densely populated urban environments. The sites have yet to be determined and the testing is not expected to begin until 2017, but these experiments will give researchers a sandbox of sorts in which they can experiment with new approaches and technologies aimed at increasing wireless bandwidth, reducing delays and supporting more mobile users, says Thyagarajan Nandagopal, who manages Wireless Networking and Mobile Computing research within the NSF's Networking Technologies and Systems program.

For the next few years 5G will remain an abstract buzzword used to prime consumers to buy more wireless products and services, as the technology takes shape. With predictions that anywhere between 20 billion and 200 billion devices worldwide will be connected wirelessly by 2020, that technology will be needed to keep once-unimaginable amounts of data flowing.

# MAILING LIST – To Whom We Send

- **Mr.B.Murali, HOD of CS, PSG college of Arts and Science, Coimbatore- 14.**
- **Mr.P.Narendran, HOD of CS, Gobi Arts &Science College, Gobichettipalayam-53.**
- **Dr.Pannir Selvam, HOD of CS, Erode Arts College (Autonomous), Erode - 09.**
- **Mr.S.SureshBabu, HOD of CS, Thiruvalluvar Government Arts College, Rasipuram.**
- **Dr.K.Thangavel, HOD of CS, Periyar University, Salem-11.**
- **Dr.P.Venkatesan, Principal, Vysya College of Arts and Science, Salem-03,**
- **Dr.P.Swaminathan, Dean, School of Computing, SASTRA University, Kumbakonam.**
- **Dr.S.K.Jayanthi, HOD of CS, Vellalar College for Women, Erode-9**
- **Dr.S.Krishnamoorthy, Dean, Anna University, Trichy-24.**
- **Dr. K. Rama, Deputy Adviser, NAAC, Bangalore.**
- **Dr.HannahInbarani, Asst Prof, Dept of CS, Periyar University, Salem-11.**
- **Dr.R.Balasubramaniam, Prof& HOD of CS, ManonmaniamSundaranar University, Tirunelveli.**

- **Dr.P.Jaganathan, Director, Dept of MCA, PSNA Engineering College, Dindugal-22.**
- **Dr.D.Venkatesan, SeniorAsst. Prof, Dept. of CS, School of Computing, SASTRA University, Tanjore-01.**
- **Dr. D.I. George Amalarethinam, Director, Department of MCA, Jamal Mohamed College, Tiruchirapalli – 20.**
- **Mr. B. Rajesh Kanna, Assistant Professor in Elect &Comm, Annamalai University, Chidambaram.**
- **Dr.H.FaheemAhmed, Asst Prof & HOD of CS, Islamiah College, Vaniyambadi – 02**
- **Dr. S. Leela, Controller of Examination, Periyar University, Salem-11.**
- **Dr. M.Manivannan, The Registrar, Periyar University, Salem-11.**
- **Prof. Dr.C.Swaminathan, Vice Chancellor, Periyar University, Salem-11.**
- **Dr.T.Santhanam, Reader& HOD of CA, Dwaraka Doss Goverdhan Doss Vaishnav College, Chennai –06.**
- **Dr.Premavathy Vijayan, Vice Chancellor, Avinashilingam University, Coimbatore.**
- **Dr.R.S.Rajesh, Reader, Computer Science and Engineering, ManonmaniamSundaranar University, Tirunelveli-12.**
- **Dr.L.Arockiam, Associate Professor, Dept of CS, St. Joseph College, Tiruchirapalli-620002**
- **Mr.V.Saravanan, Associate Professor, Dept of CA, Hindustan College of Arts and Science, Coimbatore – 28.**

- **Dr.R.Ravichandran, Secretary, Dept of CS, KGISL Institute of Technology, Coimbatore-35.**
- **Dr. N.Sairam, Associate Dean, School of Computing, Sastra University, Tanjore – 01**
- **Dr.T.Senthikumar, Asst Prof, Amrita Institute of Technology, Coimbatore - 12**
- **Mr.S.T.Rajan, Sr. Lectr, Dept of CS, St. Josephs College, Trichy-02.**
- **Dr.R.AmalRaj, Prof. Dept Of CS, Sri Vasavi College, Erode – 16.**
- **Dr.R.Pugazendi, Assistant Professor, Dept. of CS, Government Arts and Science College, Salem-7.**

# ARTIFICIAL INTELLIGENCE

FAILURE IS NOT
Falling NMOD • BUT
REFUSING TO
GET BACK↑ UP↑