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NEWS-LETTER FROM INFORMATION TECHNOLOGY,
VCE Campus, HYDERABAD-500031

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EXPERIENCE & EXPOSURE

A Message from our Alumni

Prabhakar Govind

Prabhakar Govind Kumar
Language execution engine software engineer at The **MathWorks**
Greater Atlanta Area
Computer Software

Education :

MS ECE, Computer Engineering at Georgia Institute of Technology
Vasavi College Of Engineering
Bachelor of Engineering, Information Technology
2004 – 2008
Grade: 80%

Message :

The B.E. course at VCE in the stream of Information Technology has a wide variety of skill sets that it offers to teach, ranging from core computer science topics like Algorithms to more involved Hardware courses like Micro-Processors. This array of knowledge enables one to chose from a even wider variety of career paths and opens up several hundred avenues to explore.

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Use the first two years of your BE course to narrow down the kinds of courses that you have a special liking towards, or are able to see yourself working on further in life. Once you have these areas of interest defined. Ensure that you get really thorough in that desired area of interest by perusing through the prescribed text books and taking part in as many co-curricular activities that pertain to this area of interest that you possibly can.

In my case, the area I was most interested in was Computer Architecture and all the related software and hard ware courses. I would spend a considerable amount of each semester working on co-curricular projects both within VCE and outside it, in the form of tech fests. I would take external workshops, work with professors and attend seminars to help improve my level of understanding in these projects. These projects ended up defining my resume, giving me the edge over the other students who only graduated with a degree.

The undergraduate level is the only time in your career when you will have copious amounts of the most precious resource you will soon learn to appreciate - "time".
Use it wisely.

B.E. is the foundation of your career, everything you do from now on will depend on how well you lay your foundation. Once this step is executed smoothly, everything else should fall into place.

Finally, last piece of advice that I have for you, is to "PLAN AHEAD". Planning and preparing yourself in advance for the things you want to achieve will prove to be an asset which you will never regret.

For everything else, you may want to know more about, do get in touch with me via linkedin. It may take me a while to get back, but I will.

My time in Vasavi include some of the most cherished moments in life. So, Don't forget to enjoy yourself when you are there.

Contact Prabhakar for:

•career opportunities
•consulting offers
•new ventures
•job inquiries
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"A creative man is motivated by the desire to achieve, not by the desire to beat others."

- Ayn Rand

"I cried because I had no Shoes,
Till I saw a man with no feet;
Life is full of blessings,
Sometimes we are just too blind to see them."

-Anonymous

"By failing to prepare, you are preparing to fail."

-Benjamin Franklin

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STUDENT COLUMN

Data Center

By-Rohith Reddy

A data center or computer centre is a facility used to house computer systems and associated components, such as telecommunications and storage systems. It generally includes redundant or backup power supplies, redundant data communications connections, environmental controls (e.g., air conditioning, fire suppression) and security devices. Large data centers are industrial scale operations using as much electricity as a small town and sometimes are a significant source of air pollution in the form of diesel exhaust.

History:

Data centers have their roots in the huge computer rooms of the early ages of the computing industry. Early computer systems were complex to operate and maintain, and required a special environment in which to operate. Many cables were necessary to connect all the components, and methods to accommodate and organize these were devised, such as standard racks to mount equipment, elevated floors, and cable trays (installed overhead or under the elevated floor). Also, a single mainframe required a great deal of power, and had to be cooled to avoid overheating. Security was important – computers were expensive, and were often used for military purposes. Basic design guidelines for controlling access to the computer room were therefore devised.

During the boom of the microcomputer industry, and especially during the 1980s, computers started to be deployed everywhere, in many cases with little or no care about operating requirements. However, as information technology (IT) operations started to grow in complexity, companies grew aware of the need to control IT resources. With the advent of client-server computing, during the 1990s, microcomputers (now called "servers") started to find their places in the old computer rooms. The availability of inexpensive networking equipment, coupled with new standards for network structured cabling, made it possible to use a hierarchical design that put the servers in a specific room inside the company. The use of the term "data center," as applied to specially designed computer rooms, started to gain popular recognition about this time.

The boom of data centers came during the dot-com bubble. Companies needed fast Internet connectivity and nonstop operation to deploy systems and establish a presence on the Internet. Installing such equipment was not viable for many smaller companies. Many companies started building very large facilities, called Internet data centers (IDCs), which provide businesses with a range of solutions for systems deployment and operation. New technologies and practices were designed to handle the scale and the operational requirements of such large-scale operations. These practices eventually migrated toward the private data centers, and were adopted largely because of their practical results.

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With an increase in the uptake of cloud computing, business and government organizations are scrutinizing data centers to a higher degree in areas such as security, availability, environmental impact and adherence to standards. Standard Documents from accredited professional groups, such as the Telecommunications Industry Association, specify the requirements for data center design. Well-known operational metrics for data center availability can be used to evaluate the business impact of a disruption. There is still a lot of development being done in operation practice, and also in environmentally friendly data center design. Data centers are typically very expensive to build and maintain.

Requirements for modern data centers :

IT operations are a crucial aspect of most organizational operations. One of the main concerns is business continuity; companies rely on their information systems to run their operations. If a system becomes unavailable, company operations may be impaired or stopped completely. It is necessary to provide a reliable infrastructure for IT operations, in order to minimize any chance of disruption. Information security is also a concern, and for this reason a data center has to offer a secure environment which minimizes the chances of a security breach. A data center must therefore keep high standards for assuring the integrity and functionality of its hosted computer environment. This is accomplished through redundancy of both fiber optic cables and power, which includes emergency backup power generation.

The Telecommunications Industry Association's TIA-942 Telecommunications Infrastructure Standard for Data Centers, which specifies the minimum requirements for telecommunications infrastructure of data centers and computer rooms including single tenant enterprise data centers and multi-tenant Internet hosting data centers. The topology proposed in this document is intended to be applicable to any size data center.

Telcordia GR-3160, NEBS Requirements for Telecommunications Data Center Equipment and Spaces, provides guidelines for data center spaces within telecommunications networks, and environmental requirements for the equipment intended for installation in those spaces. These criteria were developed jointly by Telcordia and industry representatives. They may be applied to data center spaces housing data processing or Information Technology (IT) equipment. The equipment may be used to:

- Operate and manage a carrier's telecommunication network.
- Provide data center based applications directly to the carrier's customers.
- Provide hosted applications for a third party to provide services to their customers.
- Provide a combination of these and similar data center applications.

Effective data center operation requires a balanced investment in both the facility and the housed equipment. The first step is to establish a baseline facility environment suitable for equipment installation. Standardization and modularity can yield savings and efficiencies in the design and construction of telecommunications data centers.

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Standardization means integrated building and equipment engineering. Modularity has the benefits of scalability and easier growth, even when planning forecasts are less than optimal. For these reasons, telecommunications data centers should be planned in repetitive building blocks of equipment, and associated power and support (conditioning) equipment when practical. The use of dedicated centralized systems requires more accurate forecasts of future needs to prevent expensive over construction, or perhaps worse — under construction that fails to meet future needs.

The "lights-out" data center, also known as a darkened or a dark data center, is a data center that, ideally, has all but eliminated the need for direct access by personnel, except under extraordinary circumstances. Because of the lack of need for staff to enter the data center, it can be operated without lighting. All of the devices are accessed and managed by remote systems, with automation programs used to perform unattended operations. In addition to the energy savings, reduction in staffing costs and the ability to locate the site further from population centers, implementing a lights-out data center reduces the threat of malicious attacks upon the infrastructure.

There is a trend to modernize data centers in order to take advantage of the performance and energy efficiency increases of newer IT equipment and capabilities, such as cloud computing. This process is also known as data center transformation.

Organizations are experiencing rapid IT growth but their data centers are aging. Industry research company International Data Corporation (IDC) puts the average age of a data center at nine-years-old. Gartner, another research company says data centers older than seven years are obsolete.

In May 2011, data center research organization Uptime Institute, reported that 36 percent of the large companies it surveyed expect to exhaust IT capacity within the next 18 months.

Data center transformation takes a step-by-step approach through integrated projects carried out over time. This differs from a traditional method of data center upgrades that takes a serial and siloed approach. The typical projects within a data center transformation initiative include standardization/consolidation, virtualization, automation and security.

Standardization/consolidation:

The purpose of this project is to reduce the number of data centers a large organization may have. This project also helps to reduce the number of hardware, software platforms, tools and processes within a data center. Organizations replace aging data center equipment with newer ones that provide increased capacity and performance. Computing, networking and management platforms are standardized so they are easier to manage.

Virtualize:

There is a trend to use IT virtualization technologies to replace or consolidate multiple data center equipment, such as servers. Virtualization helps to lower capital and operational expenses, and reduce energy consumption. Virtualization technologies are also used to create virtual desktops, which can then be hosted in data centres and rented out on a subscription basis. Data released by investment bank Lazard Capital Markets reports that 48 percent of enterprise operations will be virtualized by 2012. Gartner views virtualization as a catalyst for modernization.

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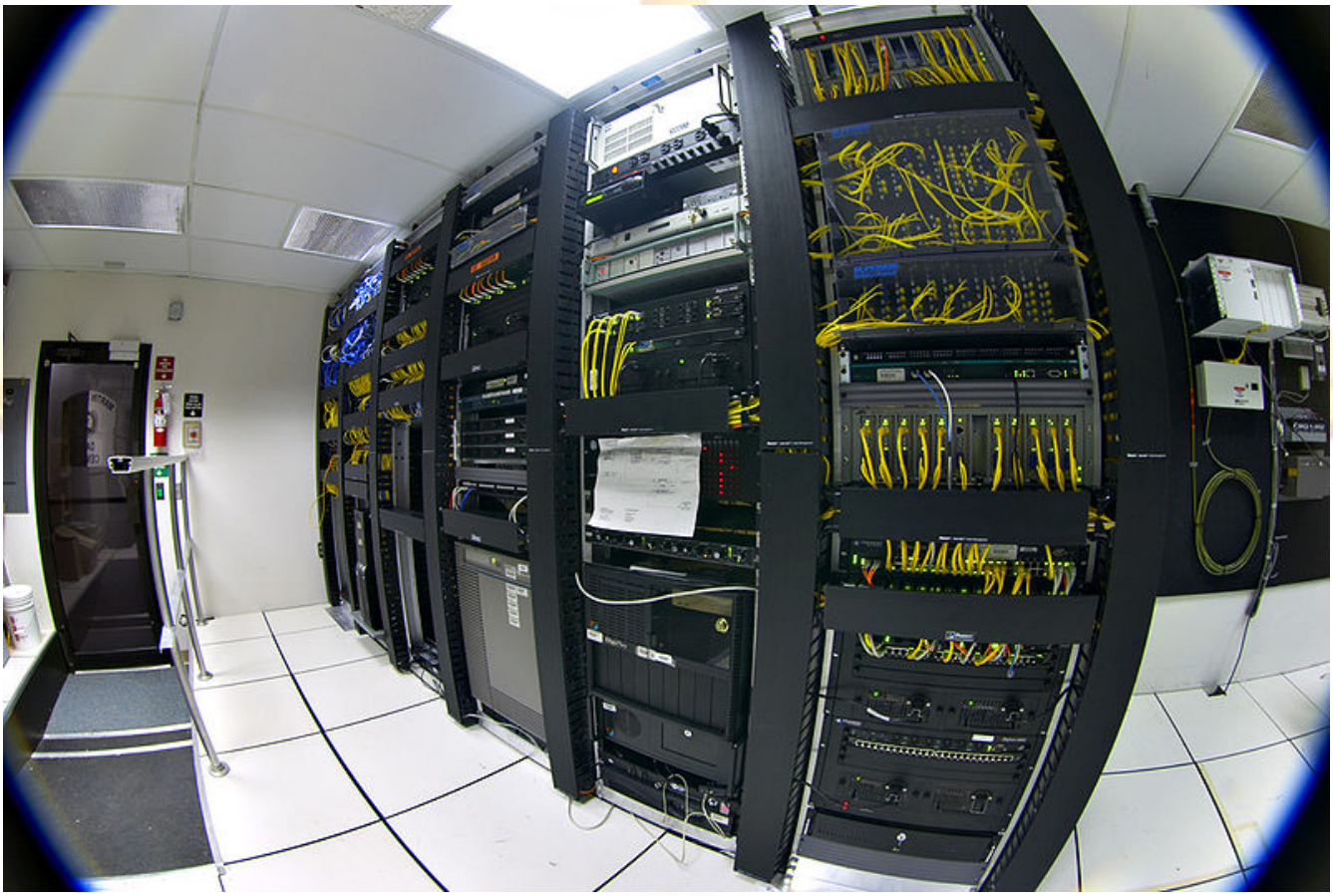
Automating:

Data center automation involves automating tasks such as provisioning, configuration, patching, release management and compliance. As enterprises suffer from few skilled IT workers, automating tasks make data centers run more efficiently.

Securing:

In modern data centers, the security of data on virtual systems is integrated with existing security of physical infrastructures. The security of a modern data center must take into account physical security, network security, and data and user security.



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MIT Breakthrough Could Double Smartphone Battery Life

As much as we love Smartphones, they are a pretty inefficient technology. We typically focus on charging as the main point of energy consumption, but new research from MIT suggests the real inefficiencies happen far from your outlet. Cellular base stations, the facilities where electricity is turned into radio signals, suck up an astounding $36 billion worth of electrical energy a year. You may think that all that juice helps to make your phone blazing fast, but it doesn't. According to researchers at MIT much of this is wasted by a single inefficient piece of hardware – and they may have finally cracked the problem with a new design.

The inefficient piece of hardware is called a power amplifier. You've actually got a smaller version inside your smartphone, and it's the reason why your device gets warm and rapidly loses battery power when streaming video or sending large files. Just like their cellular station counterparts, the amplifiers in your phone waste 65 percent of their energy by keeping standby power levels high in an attempt to avoid distorted signals. Finally, after more than 30 years of using these energy-wasting amplifiers, MIT researchers say they've made a breakthrough.

The new advance is essentially a blazingly fast electronic gearbox. It chooses among different voltages that can be sent across the transistor, and selects the one that minimizes power consumption, and it does this as many as 20 million times per second. The company calls the technology asymmetric multilevel outphasing. The technology could slash base station energy use by half. Likewise, a chip-scale version of the technology, still in development, could double the battery life of smartphones.

An MIT spinout company called Eta Devices, cofounded by two MIT electrical engineering professors Joel Dawson and David Perreault, is working quickly to prove the value of their concept at commercial scale. If successful, they hope to implement the new amplifiers at LTE base stations in the developing world, where 640,000 diesel-powered generators chew through $15 billion worth of fuel per year.

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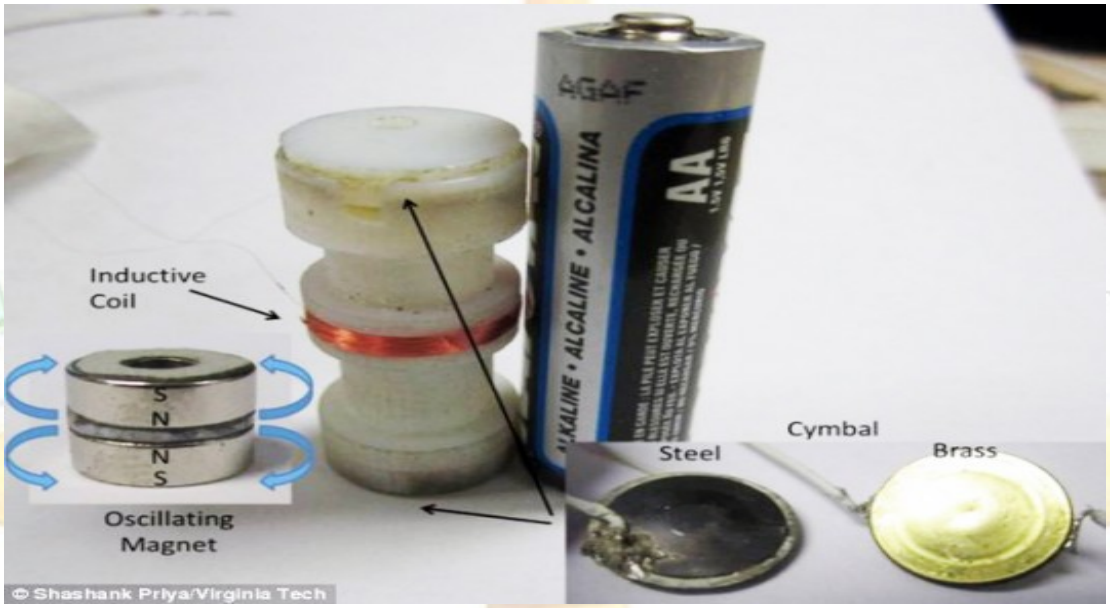
New Piezoelectric Charger Can Power Your Cell Phone With a Simple Shake

What happens if you're on the move and your cell phone runs out of batteries? For most people, it means waiting until you can access your charger. But scientists at Virginia Tech at Blacksburg have developed a new kinetic charger that makes juicing up your phone as easy as shaking your hand.



The built-in charger works on the principle of piezoelectricity – every time you tap the screen or move your phone around, the charger harvests energy that can be used to run your device during an emergency. While the technology isn't strong enough to run your phone continuously, it could generate enough power for emergency use.

Scientists experimented with zinc oxide to develop the technology. The piezoelectric charger could be mounted in a cell phone underneath the keys or screen, where it would convert mechanical vibrations into electricity. It's an exciting development that could provide cell phone users with an emergency source of power that might not be available otherwise.

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