

Clinton-Peabody Computer Village

Technology Today

INTERNET OF THINGS

IN THIS ISSUE

10 New Jobs Created by the Internet of Things by NATHAN CHANDLER

As these endless combinations of products and sensors appear in our personal and professional lives, older jobs will be transformed into high-tech gigs, and altogether new careers will appear, too.

10. Agricultural Technologist

Modern crop management involves handling. Agricultural technologists work to feed the planet by maximizing the food we get from our plants and animals. These technologists may specialize in soil analysis, livestock care or crop yields. To best do their jobs, these workers need data, and lots of it.

9. 3-D Printing Engineer

As 3-D printing becomes more and more ubiquitous, engineers who can work with the technology will be in greater and greater demand. 3-D printing technology (also called **additive manufacturing**) has been around for many years, but recent advances are making it a better option for a wider range of companies. In short, 3-D printers take objects modeled on computers and print them (often in plastic) layer by layer, until the object is complete.

8. Grid Modernization Engineers

The United States power grid is a tangled web of aging equipment, much of which

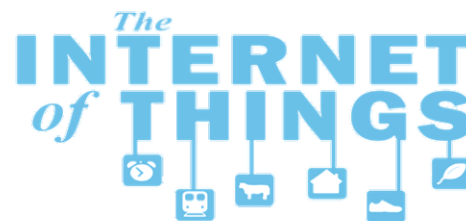
dates back to the early 1900s. In many areas, it's inefficient, unreliable and expensive to operate. A smarter, more modern grid is coming, one that requires the skills of grid modernization engineers.

A smarter grid will affect power use starting right in your own home. If all of your appliances and electronics report their power use to each other, they'd optimize their electricity consumption and maximize efficiency.

7. Wearable Tech Designer

Smartwatches are just the tip of the iceberg when it comes to wearable tech.

Smaller sensors and batteries, flexible circuitry and sweat-resistant electronics are becoming more common. Savvy companies are combining these elements into wearable technology so we can adorn ourselves with all manner of geeky goods. This isn't some wild, off-the-cuff idea. More than 70 percent of young people really, really want wearable technology



Internet of Things

Basically connecting any device with an on and off switch to the Internet (and/or to each other). This includes everything from cellphones, coffee makers, washing machines, headphones, lamps, wearable devices and almost anything else you can think of

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The Programing Language

Python is an open source programming language made to both look good and be easy to read

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6. Medical Robot Designer

A ROSA robot, being checked here by a technician, is designed for helping surgeons perform brain procedures. Medical robots account for nearly half of professional service robot sales, and for years, doctors have used robots for all sorts of medical purposes, including routine surgeries [source: McRae]. Now that the Internet is ubiquitous, robot engineers must have the knowledge to layer networking abilities into their newest robotic creations.

Medical robots generally incorporate robotics systems, sensors and surgical tools that work seamlessly with command software. Properly designed and deployed, these robots increase the productivity of a hospital, reduce the overall cost of health care and provide real benefits to the end patient.

5. Data Security Expert

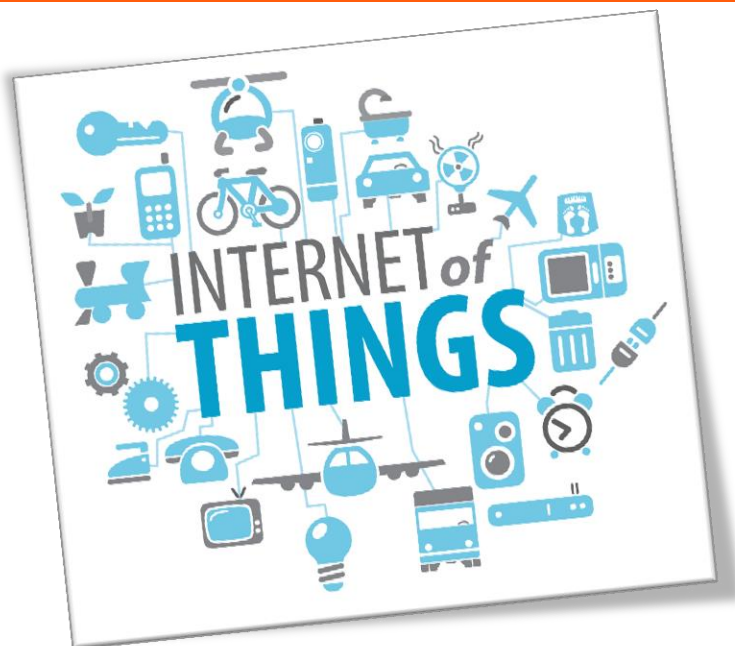
More connectivity throughout our lives means more opportunities for hackers. Data security experts have been a necessity since we hit power buttons on the very first computers. These experts ward off data loss caused by malfunction and also try to prevent or mitigate purposeful attacks by hackers with malice on their minds.

The IoT means security professionals have their hands full. With billions of devices of all kinds connecting to the Internet, the chances

of accidental data meltdowns will increase exponentially, as will the opportunities for intentional tampering. In 2014, more than 40 percent of companies reported some sort of data breach [source: USA Today].

4. Cloud Computing Specialist

Cloud computing may seem magical, but it's not. It takes a lot of hard work and diligence to maintain a seamless end-user experience. For that, you can thank cloud computing specialists. Most commonly, the experts who run cloud services have extensive backgrounds as systems engineers, software engineers and network administrators.



The IoT requires these employees to design and build applications that work with a huge variety of connected devices. They need the know-how to roll out their products. And of course, someone has to play administrator for these systems, which can impact millions or even billions of devices. With nearly \$200 billion going toward cloud services per year in the U.S. alone, companies of all sizes will roll out the cash for the best specialists [source: [Silicon Angle](#)].

3. E-discovery Investigator

When Dr. Conrad Murray was tried for involuntary manslaughter for the death of Michael Jackson, his iPhone was entered as evidence. That trial was in 2011, and mobile devices have only become more critical in criminal investigation. Investigators must understand how to uncover, collect and analyze data from a diverse array of electronics, and they must document their processes in a manner that passes muster with a judge.

2. Intermodal Transport Designers

Freight containers have been used for decades to transport goods, but now they're connected to sophisticated tracking systems. Thanks to the IoT, containers are visible to

the network from start to finish. But someone has to design and maintain that tracking system. Intermodal transport designers imagine and manage the systems that move containers in the most logical and efficient fashions.

1. Counter Hackers

Job opportunities for counter hackers aren't likely to dry up anytime soon. Companies are fighting back. Instead of relying on just law enforcement computer experts, they hire their own hackers – counter hackers who anticipate attacks and actively repel them. Hackers use sophisticated software tools or sometimes social engineering schemes to access protected networks. Once they're in, counter hackers go to work.

For more information go to <http://money.howstuffworks.com/10-jobs-internet-of-things8.htm>



10 Instagram Tips for Beginners

Instagram is one of the hottest social networks right now. It's visual, it's quick, it's mobile and it's pretty simple to use.

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What Is GitHub, and What Is It Used For?

GitHub is a website and service that we hear geeks rave about all the time, yet a lot of people don't really understand what it does. Want to know what all the GitHub hubbub is about? Read on to find out.

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Python is named after the television show Monty Python's Flying Circus. Many examples and tutorials include jokes from the show.

The Simple Explanation

by Wikipedia

Python is an open source programming language made to both look good and be easy to read. A programmer named Guido van Rossum made it in 1991. Python is named after the television show Monty Python's Flying Circus. Many examples and tutorials include jokes from the show.

Python is an interpreted language. Interpreted languages do not need to be compiled to run. A program called an interpreter will run python code on any kind of computer it can run on itself. This means if the programmer needs to change the code they can quickly see the results. This also means Python is slower than a compiled language like C, because it is not running machine code directly.

Python is a good programming language for beginners. It is a high-level language, which means a programmer can focus on what to do instead of how to do it. Writing programs in Python takes less time than in another language. Python drew inspiration from other programming languages like C, C++, Java, Perl, and Lisp.

Usage

Python is used by hundreds of thousands of programmers and is used in many places. Sometimes only Python code is used for a program, but most of the time it is used to do simple jobs while another programming language is used to do more complicated tasks.

Its standard library is made up of many functions that come with Python when it is installed. On the Internet there are many other libraries available that make it possible for the Python language to do more things.

These libraries make it a powerful language; it can do many different things.

Some things that Python is often used for are:

- Web development
- Game programming
- Desktop GUIs
- Scientific programming
- Network programming.

To learn more about Python go to <https://www.python.org>

Python script

```
1 def azureml_main(expr_as_frame):
2     import pandas as pd
3     expr = expr_as_frame.iat[0,0]
4     result = pd.DataFrame({'Expr': [expr], \
5                           'Result': [eval(expr)]})
6     return result,
```

10 Instagram Tips For Beginners

By Elise Moreau

Instagram is one of the hottest social networks right now. It's visual, it's quick, it's mobile and it's pretty simple to use.

There's no better time than now to get started with Instagram. The following 10 tips can help you make the best out of your own Instagram experience so you can grow your followers and increase engagement.

Post interesting, colorful photos and videos.

Instagram provides you with a bunch of filters you can apply to your photos to automatically enhance the look and style, but that trend seems to have already hit its peak. People want photos and videos that are colorful, but relatively natural looking. Although filter effects may be tempting, try to limit your use of them to keep the color and contrast normal in most of your photos.

Use hashtags sparingly.

Using hashtags is a great way to increase your reach on Instagram, encourage more engagement and even attract new followers. Unfortunately, some people take it way too far. Their captions are often bloated with hashtags -- many of which aren't even relevant to the topic of their photo. If you do decide to use hashtags, make sure to keep it to a minimum, and only use keywords that are relevant.

Use the Explore tab (popular page) to find great new content.

The Explore tab on Instagram is where some of the most popular photos and videos get featured. The photos that are shown here are tailored to you according to the photos and videos that have been liked or commented on by people you follow. You can find new users to follow or engage with by checking out this tab regularly.

Post often to keep followers interested.

If you want to keep followers engaged, you need to post new content on a regular basis. That doesn't mean you need to be posting 10 photos a day. In fact, posting once a day -- or at least once every other day -- should be frequent enough to keep your current followers interested. If you go long periods of time without posting, don't be surprised if you lose a few followers.

Use Instagram Direct to get into contact with specific users.

Although it's a good idea to post frequently to keep your followers engaged, sometimes it's not always necessary to publicly post something to all your followers. Instead you can target one or more specific users by privately direct messaging them a photo or video. Instagram Direct is a great way to connect with specific groups of users without needing to broadcast your content to everyone all at once.

Interact with your followers.

Never ignore your most loyal followers who regularly like and comment on your photos! That's a surefire way to eventually drive people away. Instead, you want to make your followers feel valued. Reply to their comments or even go check out their account and like a few of their photos. You can use a third party tool like Iconosquare (formerly called Statigram) if you want, to track comments and see which users are interacting with you the most.

Don't be tempted to purchase followers.

There's a lot of hype around buying Instagram followers. And it's true that you can get some big numbers for pretty cheap. The problem with buying them is that they're often mostly fake and inactive. Your account may look a little strange to users who see that you have 15K followers, but almost no likes or comments on your photos and videos. Stick to real engagement. It's not all about the numbers.

Experiment with shoutouts.

Interacting with your current followers is always recommended, but the more people you reach out to, the better. Doing a shout out or s4s with another account in the same follower range is a very fast and effective way to reach more people. Two users basically agree to give the other a shoutout post on their own accounts. This is actually the main technique that many Instagram users have used to grow their accounts by the thousands.

Stay on top of the latest Instagram trends.

Hashtags and shoutouts are great, but even trends like these will eventually have an expiry date. If Instagram is a major social networking platform for you, it's important to keep up with the latest trends to avoid getting left behind and putting yourself at risk of losing valuable followers. Check out these five big trends that are currently hot on Instagram.

For more social media tips go to www.lifewire.com

What Is GitHub, and What Is It Used For?

by **Korbin Brown** on February 4th, 2014

GitHub is a website and service that we hear geeks rave about all the time, yet a lot of people don't really understand what it does. Want to know what all the GitHub hubbub is about? Read on to find out.

To understand GitHub, you must first have an understanding of Git. Git is an open-source version control system that was started by Linus Torvalds – the same person who created Linux. Git is similar to other version control systems – [Subversion](#), CVS, and Mercurial to name a few.

Version control systems

So, Git is a “version control system,” what's that mean? When developers are creating something (an application, for example), they are making constant changes to the code and releasing new versions, up to and after the first official (non-beta) release.

Version control systems keep these revisions straight, and store the modifications in a central repository. This allows developers to easily collaborate, as they can download a new version of the software, make changes, and upload the newest revision. Every developer can see these new changes, download them, and contribute.

Similarly, people who have nothing to do with the development of a project can still download the files and use them. Most Linux users should be familiar with this process, as using Git, Subversion, or some other similar method is pretty common for downloading needed files, especially in preparation for compiling a program from source code (a rather common practice for Linux geeks).

In case you are wondering why Git is the preferred version control system of most developers, it has multiple advantages over the other systems available, including a more efficient way to store file changes and ensuring file integrity. If you're interested in knowing the details, check out [this page](#) to read a thorough explanation on how Git works.

The “Hub” in GitHub

We've established that Git is a version control system, similar but better than the many alternatives available. So, what makes

GitHub so special? Git is a command-line tool, but the center around which all things involving Git revolve – effectively, the Hub, is GitHub.com, where developers can store their projects and network with likeminded people.

Let's go over a few of the main reasons that geeks like to use GitHub, and learn some terminology along the way.

Repository

A repository is a location where all the files for a particular project are stored, usually abbreviated to “repo.” Each project will have its own repo, and can be accessed by a unique URL.

Forking a repo

“Forking” is when you create a new project based off of another project that already exists. This is an amazing feature that vastly encourages the further development of programs and other projects. If you find a project on GitHub that you'd like to contribute to, you can fork the repo, make the changes you'd like, and release the revised project as a new repo. If the original repository that you forked to create your new project gets updated, you can easily add those updates to your current fork.

Pull requests

You fork a repository, make a great revision to the project, and want it to be recognized by the original developers, maybe even included in the official project/repository. You can do so by creating a pull request, so the authors of the original repository can see your work, and then choose whether or not

to accept it into the official project. Whenever you issue a pull request, GitHub provides a perfect medium for you and the project's maintainer to communicate.

Social networking

The social networking aspect of GitHub is probably its most powerful feature, and is what allows projects to grow more than anything else. Each user on GitHub has their own profile, which can act like a resume of sorts, showing your past work and contributions to other projects via pull requests.

Project revisions are able to be discussed publicly, so a mass of experts can contribute knowledge and collaborate to advance a project forward. Before the advent of GitHub, developers interested in contributing to a project would usually need to find some means of contacting the authors, probably by email, and then have to convince them that their contribution is legit and they can be trusted.

Changelogs

When multiple people are collaborating on a project, it's really hard to keep track of who changed what, and to keep track of the revisions that took place. GitHub takes care of this problem by keeping track of all the changes that have been pushed to the repository.

GitHub isn't just for developers

All this talk about how GitHub is ideal for programmers may have you believing that they are the only ones who will find it useful. Although it's a lot less common, GitHub can actually be used for any types of files – so if you have a team that is constantly making changes to a word document, you can actually use GitHub as your version control system. This practice isn't common as there are better alternatives, but keep it in mind.

Now that you know what GitHub is all about, are you ready to get started? Head over to [GitHub.com](#) and be sure to check out their [help pages](#) after signing up.

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