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The Digital

# Viking



## Twin Cities

PC USER GROUP

NEWSLETTER

Minneapolis & St. Paul, Minnesota USA • Vol. 38 No.6• Jan. 2018

*TC/PC Exists to Facilitate and Encourage the Cooperative Exchange of PC Knowledge and Information Across All Levels of Experience*

**January 2018**

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## General Meeting Tuesday, January 9, 2018 7:00 PM

### Show Us Your Gadget

**Summit Place  
8505 Flying Cloud Drive  
Eden Prairie, MN 55344**

It's time to show off your latest gadget, whether it be a new piece of hardware, a software program, a bot, a utility, an online program, or ? If you received a new "toy" or used your savings to purchase a gift for yourself or built something yourself with your 3D printer we need to see it. Please come prepared to demonstrate the gadget with a short explanation and compete to win some nice prizes. The best of show will appear in the February Viking. 

**If you arrive late and building is locked...** Because Summit Place graciously allows us to use their media room we must abide by their rules. The building is locked at 7:00 PM, so if you arrive late and the door is locked, TC/PC now has a phone number where you can leave a text message and someone at the meeting will open the door for you as soon as is practical. The number is:

(612) 930-2855 

**Tech Topics at 6PM with Jack Ungerleider**

TC/PC is a Member of



**24-Hour Information • [www.tcpc.com](http://www.tcpc.com)**

Application form inside back cover

## The Digital Viking

The Digital Viking is the official monthly publication of the Twin Cities PC User Group, a 501(c)(3) organization and an all-volunteer organization dedicated to users of IBM-compatible computers. Subscriptions are included in membership. We welcome articles and reviews from members. The Digital Viking is a copyrighted publication and reproduction of any material is expressly prohibited without permission. Exception: other User Groups may use material if unaltered and credited.

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Full page (7½ x 9½)	\$100.00
Two-thirds page (7½ x 6)	80.00
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One-third page (7½ x 3)	50.00
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Member Bus. Card (2 x 3½)	10.00

Multiple insertion discounts available.

Contact Sharon Walbran at: SQWalbran@yahoo.com

Deadline for ad placement is the 1<sup>st</sup> of the month prior to publication. All rates are per issue and for digital or camera-ready ads. Typesetting and other services are extra and must be requested in advance of submission deadlines.

Payment must accompany order unless other arrangements are made in advance. Place make checks payable to: **Twin Cities PC User Group**

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Meets once or twice per year. All members welcome to attend.

Visit [www.tnpc.com](http://www.tnpc.com) for meeting details.

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TC/PC Text Message  
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## TC/PC Member Benefits

Product previews  
and demonstrations

Special Interest Groups  
Monthly Newsletter

Discounts on products  
and services

Contests and prizes

## Business Member Benefits

All of the above PLUS:

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payment of each renewal

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Up to 5 newsletters mailed to  
your site  
(only a nominal cost for each  
additional 5 mailed)

## Newsletter Staff

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Contributors:

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## Can You Beat the Bots?

By David Kretchmar, Computer Hardware Technician,  
Sun City Summerlin Computer Club, NV, November 2017 issue, Gigabyte Gazette  
<http://www.scsccl.com>,  
tomburt89134 (at) cox.net

When tickets for a musical I wanted to see (Book of Mormon) went on sale at the Smith Center's website, I immediately went on line to buy tickets. I was surprised to learn that only a few scattered seats remained, even though tickets had only been on sale for a few hours. Yet ticket scalpers had plenty of seats available - for double or triple their original selling price.

When the play returned to the Smith Center last year I went on online the minute as soon as tickets were available (12:00 A.M.) and I could score 4 tickets for great seats (about 5<sup>th</sup> row center orchestra) at a reasonable price, but I noticed many good seats had already been sold. How could this be, I wondered?

The answer is, of course, Bots; they are software robots that enter multiple orders, sometimes many thousands of times instantly, for scarce items. Often popular items such as show, and sporting event tickets, popular electronics, and hot children's toys are the target of Bots.

Since the dawn of the Internet, scalpers have been using shopping Bots to scoop up online ticket sales within seconds of their being offered. They then sell the tickets for huge markups. Often shoppers will place orders and tickets will disappear from their virtual shopping carts before they can check out.

Congress acted to stop ticket scalping by passing the Better Online Ticket Sales Act of 2016 AKA the Bots Act of 2016, but the new regulations apply only to event tickets. The popular East Village and then Broadway play Hamilton is credited with helping to precipitate the legislation. The Broadway show sold out more than a year in advance, and \$200 face value tickets were going for \$800, shutting out even members of Congress.

This holiday season Shopping Bots will again be used to snatch up hot toys and electronics as soon as they become available online. Then they will only be available on sites such as eBay, or maybe Craig's list where they will be sold at inflated prices. But if your grandchild just must have the latest incarnation of a certain toy (remember "Tickle Me Elmo" a few years ago), the outrageous price will often be paid rather than having to deal with a very disappointed kid.

Many vendors have attempted to limit the power of shopping Bots with software programs, with limited success so far. Vendors identify Bots by their Internet IP address, but Bots have learned to disguise these. Bots can also pay in a variety of way to obscure the fact they are Bots. In this cat and mouse game of vendors vs. Bots the Bots have usually eventually been successful.

Some vendors are having some success addressing the issue. Adidas, the sports shoe manufacturer, has initiated a new program called Confirmed. This App lets a buyer reserve and pay for shoes online, then pick them up in person at a retailer (you go brick and mortar!). You might have noticed some online sellers require potential buyers to put an item in their virtual shopping cart before the price is revealed. This is partially designed to prevent shopping Bots from zeroing in on a good price and blocking out retail buyers.

You can do some things to prevent Bots from stealing your successful on line buying experience. Learn what the suggested retail price of an item is before you shop, and don't pay any more. The biggest way to defeat scalpers is to shop early. And good luck with that toy. 🖥️

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## Facebook Extras

By Bob Schultz, Editor, Lake-Sumter Computer Society, FL

October 2017 issue, NewsBytes

[www.lscs.us](http://www.lscs.us)

Editors (at) lscs.us

Facebook is either loved or hated by computer/smart phone users. Some think it is a way for people to show how important they are or how much "stuff" they have. Others believe it is a way to maintain or find lost friends. But either case there are hidden files you may like to know about. Here are five areas of concern Facebook has addressed.

1. Did you know that Facebook looks out for you by filtering messages that may be spam? You can check these filtered messages by going to the hidden file and if there are filtered messages you can access this folder by inserting the following address [<https://www.facebook.com/messages/>] into the browsers search bar. Click on the "clog" icon. This will open a window with several selections. Open "Connection Requests." In the next menu click on "See Filtered Requests". If Facebook detected any suspicious messages, they will be noted.
2. There is another feature Facebook uses to help control your privacy. It is a help that Facebook asks your permission to use a tag when someone tags you in a photo, but maybe you missed it and don't want it tagged. You can review these photos by checking your Activity Log.

To access the Activity Log, just click the "View Activity Log" button located on the bottom right side of your desktop cover photo. In the menu that comes up you can select what you want to see.

3. Have you ever been at a friend's house, used their computer on Facebook and realized when you got home you never logged out. Do not fear Facebook has made it possible to sign out from home. Open Facebook and click on the drop-down arrow in the upper-right corner of the home screen and select "Settings". Next click "Security and Login". Look for the "Where You're Logged In". In this section, find the device you want to log off from by clicking the three vertical dots on the left side then select "Log Off."
4. For whatever reason you don't want anyone posting on your timeline but you. Simple. Go to "Settings" and then choose "Timeline and Tagging". Click on "Edit" on the "Who can post on your timeline" section and set to "Only Me".
5. If you do not care what anyone comments on a post, you can eliminate the notifications by turning off notifications for that post. To do this, just go to the post then click on the little arrow pointer on the upper right corner of the post's header then select "Turn off notifications for this post." 🖥️

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# Chromebooks for Seniors

by Rich Davis, Communications Director, Computer Booters of Sun Lakes, AZ

October 2017 issue, The Computer Booter

[www.computerbooters.org](http://www.computerbooters.org)

Chromebooks are laptops that use Google's operating system. They are quite inexpensive as compared to a Windows or Apple machine. My newest Chromebook is 15" and was \$129.00 as a refurbished item.

I had a back injury some years ago when I heard about Chromebooks as they had just been rolled out. The critics slammed them as being quite useless. I seemed to be drawn to them after reading a lot about how they work. This looked like a good computer to me. I decided to challenge the critics and make this my main machine if I could. I would be able to spend some time learning as I was laid up.

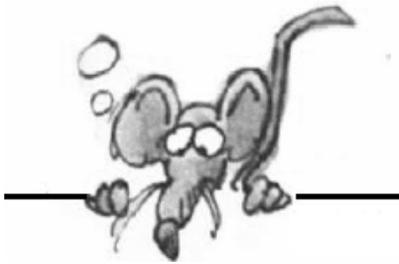
One drawback that the critics named was storage. My first Chromebook had only 18gb of hard drive. I had a Gmail account and found that I had 15gb of space for free. I could also add an SD card to give me much more. Also, when you buy a Chromebook you get an extra 100gb of online storage for free for a couple of years. Another, or maybe equal to the first was that you had to be online to use your Chromebook. I always am so that didn't bother me. Improvements have made the Chromebook useful offline as of now. The third obstacle was that you couldn't load software.

True, but instead we use apps that are downloaded. In my opinion, they are better than software. Some of the apps are not as robust as a complete software suite. But, hey, I have slowed down with work and the apps work fine for me. Also, Google sets up a drive in the cloud, which means on their servers, for the user. Included is a software suite almost as good as Microsoft Office and compatible with it.

Once I got the knack of using my Chromebook I never looked back. Updates take a few seconds. The laptop starts in 7 seconds. The battery life is about 10 hours. I can watch Netflix movies, Skype, Email, create documents and slideshows, and much more. There is no need for antivirus software.

It is perfect for me. Did you know that 70 percent of schools use Chromebooks because of their price and functionality eclipsing iPads and Windows machines for students? So, the critics were dead wrong. They didn't give something new a fair chance. A couple of years ago my grandson, 14, told me how cool my Chromebook was. I sure was proud of my decision to go with my gut and try something new. 

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# NIBBLERS

By Jeannine Sloan

## Storage Sense in Windows 10

Do you need to get rid of files to make more storage space? Go to Settings | System | Storage | Storage Change settings to how you want them to operate. To check details on each disk go back one screen, click on the Disk to highlight it and a chart of what is taking up storage space on that disk is detailed.

<https://www.wikitechy.com/technology/10-advanced-tips-tricks-windows-10/>

## Sharing

OneDrive is Microsoft's cloud service for storing and sharing files. You can store business documents, presentations, pictures, videos, your personal folders and many other types of items. You can share anything from OneDrive using the OneDrive app for Windows, iOS, Android and so on. However, you can also share stuff from the OneDrive website, in any web browser that you want to use.

<https://www.digitalcitizen.life/how-share-files-and-folders-using-onedrive-website>

## Rename a Folder Full Of Files

Renaming a file in File Explorer (Windows Explorer in Windows 7) is a straightforward process. Select a file and then either press F2 or click Rename from the right-click shortcut menu to make its filename available for editing. Enter the new filename, press Enter, and you're finished.

But what if you have a group of files you want to rename as a bulk operation? This situation might come up if you've gathered a collection of digital image files from different sources and saved them in a common folder. They might have a hodgepodge of naming formats, and the prospect of renaming them one by one is not appealing.

File Explorer has that scenario covered. Select all the files you want to rename: Use Ctrl + click to select files individually; click the first file and then Shift + click to select a contiguous group of files; or press Ctrl + A to select all files in the current folder. Then right-click any selected file and click Rename. Enter the name you want to use as the base name for the group of files and press Enter. File Explorer renames the entire group, adding a sequential number in parentheses at the end of each filename.

By Ed Bott, from TechRepublic ezine

## **Google vs. Amazon**

A rare public spat in the technology industry escalated on Tuesday when Google said it would block its video streaming application YouTube from two Amazon.com Inc devices and criticized the online retailer for not selling Google hardware. Read Reuters article here:

<https://tinyurl.com/y97gl459>

## **What Is Blockchain? Another Explanation**

Blockchain is an algorithm and distributed data structure for managing electronic cash without a central administrator among people who know nothing about one another. Originally designed for the crypto-currency Bitcoin, the blockchain architecture was driven by a radical rejection of at (government-guaranteed) money and bank-controlled payments. Blockchain is a special instance of Distributed Ledger Technologies (DLTs), almost all of which have emerged in Bitcoin's wake.

[www.zdnet.com/article/blockchain-explained-in-plain-english/](http://www.zdnet.com/article/blockchain-explained-in-plain-english/)

## **Taking a Second Look at the “Learn-To-Code” Craze**

Over the past five years, the idea that computer programming – or “coding” – is the key to the future for both children and adults alike has become received wisdom in the United States. The aim of making computer science a “new basic” skill for all Americans has driven the formation of dozens of nonprofit organizations, coding schools and policy programs.

Read the complete article here:

<https://theconversation.com/taking-a-second-look-at-the-learn-to-code-craze-86597>

## **Photos: Take A Tour Of This Major New Datacenter**

<https://www.techrepublic.com/pictures/photos-take-a-tour-of-this-major-new-datacenter/2/>

## **CPU, GPU, and APU**

For the sake of keeping it all straight and to potentially help you get the hardware you need, let's take a look at the differences between the terms CPU, GPU, and APU.

Read article here:

<https://www.windowscentral.com/difference-between-cpu-gpu-and-apu>

## **New Shortcut in Windows 10**

<https://tinyurl.com/ydaow9kr>

## **How to enable System Restore on Windows 10**

By default System Restore isn't enabled on Windows 10, but you can use these steps to enable the feature:

1. Open Start. Search for Create System Restore and click the result to open System

Protection.

2. Under "Protection Settings," if your device system drive has "Protection" set to Off, click the Configure button.
3. Select the Turn on system protection option.
4. Click Apply. Click OK.

Read more here:

<https://www.windowscentral.com/how-create-automatic-system-restore-points-daily-windows-10>

## 10 Breakthrough Technologies in 2017

These technologies all have staying power. They will affect the economy and our politics, improve medicine, or influence our culture. Some are unfolding now; others will take a decade or more to develop. But you should know about all of them right now.

**Reversing Paralysis:** Scientists are making remarkable progress at using brain implants to restore the freedom of movement that spinal cord injuries take away.

**Self-Driving Trucks:** Tractor-trailers without a human at the wheel will soon barrel onto highways near you. What will this mean for the nation's 1.7 million truck drivers?

**Paying with Your Face:** Face-detecting systems in China now authorize payments, provide access to facilities, and track down criminals. Will other countries follow?

**Practical Quantum Computers:** Advances at Google, Intel, and several research groups indicate that computers with previously unimaginable power are finally within reach.

**The 360-Degree Selfie:** Inexpensive cameras that make spherical images are opening a new era in photography and changing the way people share stories.

**Hot Solar Cells:** By converting heat to focused beams of light, a new solar device could create cheap and continuous power.

**Gene Therapy 2.0:** Scientists have solved fundamental problems that were holding back cures for rare hereditary disorders. Next we'll see if the same approach can take on cancer, heart disease, and other common illnesses.

**The Cell Atlas:** Biology's next mega-project will find out what we're really made of.

**Botnets of Things:** The relentless push to add connectivity to home gadgets is creating dangerous side effects that figure to get even worse.

**Reinforcement Learning:** By experimenting, computers are figuring out how to do things that no programmer could teach them.

<https://www.technologyreview.com/lists/technologies/2017/>

## Keep the Hackers Out

Two-factor authentication is a way to keep your accounts secure from hackers - even those who manage to get your password.

<https://tinyurl.com/y8uemdwg>

## Windows 10 Keyboard Shortcut

Turn desktop display to black and white:

Ctrl+Logo+c, repeat to return to a color display.

<https://www.digitalcitizen.life/fix-problemscreen-turned-black-white-grayscale-windows-10>

## Things to Look for in Tech 2018

While many of us think of technology in a very specific sense of the word (i.e., smartphones, drones, etc.) this tech trends list also includes more complex technology ideas like robotics, laser-transmitted internet, decentralized medical record systems, and other ideas a little bit off the well-worn tech path. If even half of these trends expand beyond where they're at right now, then we're in for a very exciting year.

1. Blockchains gain more widespread adoption
2. Narrow artificial intelligence expands
3. Underground mass transportation gains more traction
4. 5G Wireless Broadband launches
5. Bitcoin grabs more headlines
6. Augmented reality goes mainstream on mobile
7. We catch a glimpse of the world's first true driverless car service
8. New solar energy developments
9. In-home digital virtual assistants become more prevalent
10. Quantum computing becomes more accessible
11. Surgical robots enter more operating rooms
12. Taxi drones take to the skies
13. Alphabet will deliver internet via lasers in India
14. The Internet of Things marches on
15. The return of augmented reality headsets

To read the article from the beginning, go here:

<https://www.fool.com/slideshow/15-tech-trends-watch-2018/>

To read the explanation for a specific prediction add the phrase “?slide=2” to the link (replace the number as appropriate:

<https://www.fool.com/slideshow/15-tech-trends-watch-2018/?slide=2>

## 2018 Photography Trends Fuse Reality and Creativity

2018 could mix the trend toward authenticity with an opposite but equally dominant trend: Creativity. As 2017 comes to a close, stock photography companies tally data from the previous year to predict what imaging styles are going to dominate in the next year. The reports help not just stock photographers but photographers, videographers and other creatives in a number of different disciplines pinpoint what will help their work make an impact on viewers. While there are a few unique trends to different platforms, the reports suggest a mix of two big but opposite qualities, authenticity, and creativity, will be driving the biggest 2018 photography trends, as well as trends in video and other visual content.

[https://www.digitaltrends.com/photography/2018-photography-trendsadobe-stock-storyblocks/?utm\\_source=feedly&utm\\_medium=webfeeds](https://www.digitaltrends.com/photography/2018-photography-trendsadobe-stock-storyblocks/?utm_source=feedly&utm_medium=webfeeds)



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# Special Interest Groups (SIGs)

w Work phone h Home phone c Cell phone  
\* Meets at an alternate location

Most SIGs will meet at Edina Executive Plaza, Conference Room #102, 5200 Willson Road, Edina, MN

Confirm with a SIG group if they meet elsewhere.

For more info contact the SIG Leader(s) listed here.

Get SIG announcements!

Link from [www.tpc.com](http://www.tpc.com)

## Board of Directors\*

All members are welcome! Check [www.tpc.com](http://www.tpc.com) for location.

**Selected Saturday mornings**

## Linux on Saturday

This is for the Linux newbie and those trying to come over from Microsoft to a different operating system.

**Second Saturday @ 9 AM-Noon**

**Note: No Meetings June-August**

Jack Ungerleider 612/418-3494 c  
jack@jacku.com

## Tech Topics

Technical presentation/discussion on various technical topics from the following areas:

- Web/Internet
- Mobile Devices and Apps
- Playing with Programming
- DIY (3D Printing, R-Pi, other hobby electronics, etc.)

**Second Tuesday @ 6:00-7:00 PM**

Every month

Right before the general meeting.

Jack Ungerleider 612/418-3494 c  
jack@jacku.com

## Microsoft Access

All levels. Presentations by expert developers within the group and by MS reps.

**Third Saturday 9:00 AM—Noon**

**Note: No Meetings June-August**

Steve Kuhlmeiy 952/934-8492  
skuhlmeiy@hotmail.com

## Microsoft Office

Addresses the use, integration, and nuances of the Microsoft Office applications.

**Combined with Systems on Saturday**

**Third Saturday of the Month**

**9:00 AM—Noon**

**Note: No Meetings June-August**

Steve Kuhlmeiy 952/934-8492  
skuhlmeiy@hotmail.com

## Directions to Summit Place for General Meetings:

Proceed to Eden Prairie Center Flying Cloud Drive . [Flying Cloud Drive runs along the West side of the Eden Prairie Center.] Once you have driven past Eden Prairie Center (on the left) along Flying Cloud Drive you will come to a stop light at Prairie Center Drive. The next intersection with a stop light and left turn lane is Fountain Place. Turn left at Fountain Place and go straight into the parking lot. Turn left again to the first covered entry way of Summit Place. There is plenty of parking in the large parking lot in front of the first Summit Place covered entry way. When you enter the door at the first covered entry way, ask to be directed to the Performance Room for the TC/PC meeting. For a map of more detailed directions and *info on Web SIG and Board meeting*, check the TC/PC website.

Directions to **Edina Executive Plaza** for **Systems on Saturday, Access, Word and Picture Perfect SIGs**: Take Highway 100 to the 50th Street/Vernon exit. [If you have come from the north, cross back over Highway 100 to the east side.] Take the first right and go past Perkins [The golf course will be on your left.] and continue on the east frontage road (Willson Road) to the next building—5200 . There is ample parking in the building's lot. Conference Room #102 is on 1st floor.

## Help yourself by helping others!

## Join the team & share your knowledge with others.

Contact TC/PC at [www.tpc.com](http://www.tpc.com)

Meetings start at 7:00 PM (9:00 AM on Saturday) unless otherwise noted. \*Meets at Edina Executive Plaza.

**January**  
**February**

SUN	MON	TUES	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9 General Mtg Show Us Your Gadget 7PM 6PM Tech Topics	10	11	12	9 Linux on Saturday 9AM-11AM
14	15	16	17	18	19	20 MS Office and Access 9AM-Noon
21	22	23	24	25	26	27
28	29	30	31	1	2	3
4	5	6	7	8	9	10 Linux on Saturday 9AM-11AM
11	12	13 General Mtg TBA 7PM 6PM Tech Topics	14	15	16	17 MS Office and Access 9AM-Noon
18	19	20	21	22	23	24
25	26	27	28			

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## High-Tech Remembering

By Greg Skalka, President, Under the Computer Hood User Group, CA  
October 2017 issue, Drive Light, [www.uchug.org](http://www.uchug.org)  
president (at) uchug.org

As we get older, our human memory seems to fail us. For some of us, this seems to start at a relatively early age, while others have good recall into our twilight years. Sometimes we have a greater problem retaining short-term memories, like what we had for dinner the night before or where we left our car keys, but can recall in detail events of many decades ago. Most of us just slowly start forgetting things. Of course, a blow to the head or a stroke can degrade even the best of memories.

Our technology today is filled with memories of various kinds - volatile and non-volatile, fast and slow, large and small capacity. The SDRAM (synchronous dynamic random access memory) used for the main storage in most computers and smartphones is the ultimate in short-term memory. If power is removed, all the information stored in it quickly fades away. Flash memory (for small capacity applications) and magnetic media like hard drives (for large capacity) are non-volatile, and can retain their stored data for long periods of time without power. All of these memory types can suffer losses of data due to electrical, magnetic and cosmic ray abuse, and do also degrade over time just from normal use.

In these respects, the memories in our tech devices suffer from the same issues as our human, brain-based memories. Just as with our brains, semiconductor and magnetic memories lose their ability to reliably store information over time. Abuse to these memory devices, through actions like static discharge, extremes in temperature or mechanical shock (to a hard drive) can cause permanent damage, as a concussion or stroke does to a brain.

One means of information loss in our tech memories that does not really have an equivalent in the brain is in deletion. Information in semiconductor memories or hard drives can be deleted or overwritten. We humans don't really have a way to intentionally delete or forget information (this might be convenient for lost loves or humiliating experiences), though trauma may cause memories to be repressed or unconsciously blocked. In theory, therapy may be able to recover repressed memories in humans. In theory, there are also techniques that may be effective in recovering deleted files in semiconductor and magnetic memories.

Deleting a file from your computer (stored on a hard drive, or in semiconductor memory device like a flash drive or memory card) does not initially eliminate the data file, but instead removes the file's location from the computer's file system. In Windows, the deleted file goes into the recycle bin, from which it can be easily recovered. Even if the recycle bin is emptied, the file's data remains in the storage media until it is overwritten. Special software tools (data recovery software) can often recover these deleted files from hard drives, USB flash drives and memory cards. I recently had need of such software, as I accidentally deleted photos and videos from the memory card in my smartphone.

When my wife and I went on vacation to Nebraska to view the total solar eclipse on 8/21/17, I left my Windows laptop at home and instead traveled with my smaller and lighter Chromebook. For its main job, it was well suited - accessing the internet and viewing web pages while on travel. It was less capable at its secondary task, copying photo and video files from the many cameras we took with us to a mass storage.

With four still and four video digital cameras being packed for this trip, I did not want to bring the multiple memory cards for each camera that would be necessary to hold all the files we would generate over the week we would be traveling. On past trips, I'd simply copied the contents of the memory cards from the cameras to the hard drive in my laptop, and then erased the cards for reuse. Since the Chromebook has no large internal storage, I planned to use it to copy my photos and videos to an external USB hard drive I brought.

I practiced copying these files before we left, and this all worked well for the files on my digital still cameras and digital video cameras. For some cameras, I removed the SD memory card and used the Chromebook's SD card reader. For others, I accessed the camera memory through a cable between the camera and the Chromebook's USB port. I also copied the photos and videos from the memory card in my smartphone, also through a USB cable. Since I had switched the micro SD card in my phone to be a 128 GB card the day before we left, I was in no risk of filling it up and really did not need to copy from it, but I did it anyway to be consistent. This later proved to be a big mistake on my part.

I am very familiar with the Windows file manager, but not so much with the file manager in the Chrome OS. While copying the folders of photos and videos from my Samsung Galaxy J3 Prime, an Android-based smartphone, to the external USB hard drive late one night in our hotel room, I got an error message that some files did not copy. I should have stopped right there and then, but haste and late nights make waste. I decided to delete those incompletely copied folders from the hard drive and try again, but due to my lack of familiarity with the Chrome OS file manager, I accidentally deleted the photo folders on my smartphone instead.

In the panic of the realization of what I had just done, I doubled down on my error and immediately copied those folders back from my external drive to the smartphone memory card. After reviewing the photos now on the smartphone, I found many photos and videos, including all I had taken in the last few days on the trip, were missing.

Fortunately, I finally stopped and calmly took stock of my situation. I had deleted all the photos from my smartphone, but fortunately I had backups of all but for the last few prior days of my trip. The photos taken with my smartphone were mainly just supplementals; most of my photography was done with my digital cameras. There were only a few cases where I had lost unique photos not duplicated by my cameras, amounting to perhaps several dozen files. If those missing smartphone photos were lost forever, it would not be

the end of the world for me, but I would still like to get them back. If I stopped further photography with my smartphone, I could try to recover the missing files when I returned home. Unfortunately, I had already copied back to the memory card the files I did have on the external drive, and so may have already overwritten some files, and thus lost them forever.

When I returned home, I started looking for a solution to my deleted file problem. A web search turned up many software options for file recovery from memory cards. There were a few programs that were free, but many were not. I then recalled a program I had seen demonstrated at one of the Southwest User Group Conferences. I believe it was Terry Currier of the WINNERS group (WINDows usERS) that gave the presentation, and one program he recommended and demonstrated was Recuva. I decided to make this attempt with something I had seen, rather than an unknown.

Recuva is produced by Piriform ([www.piriform.com](http://www.piriform.com)), the same company that makes CCleaner. Recuva comes in a free version, as well as a Pro version for \$19.99 (both as downloads). My recollection was that Terry used the free version, so I downloaded it and installed it on my Windows 7 laptop. To make things as simple as possible for Recuva, I removed the micro SD card from my phone and put it in an SD adapter I could plug into my laptop's memory card reader, rather than connect through a USB cable on the phone.

When Recuva starts, it uses a wizard to simplify the process, though you can easily skip it. Being relatively unfamiliar with the program, I used the wizard, which asks just a few simple questions of the user. The first wizard screen asks you to select the type of files you are trying to recover. Since it would not allow the selection of multiple types (pictures and video), I selected "all files". In the next screen, I specified the location of the SD memory card (drive letter). The final screen had a start button, which initiates the search for deleted files. It also has a check box for "deep scan", which I skipped initially.

The first pass took only a few minutes and found 32 files. I selected them all to be copied to a folder on an external hard drive. I examined the folder and found the files recovered were all JPEG photos, almost all from before my trip, and none of the ones I really wanted.

I ran through the wizard a second time, this time with the deep scan selected. It took about two hours, but this time Recuva found 351 files. I had it save them all to a second hard drive folder. There were a lot of files that I already had from back-ups, but there were also the JPEG and MP4 files that I was looking for. It appears that Recuva was able to recover all of the missing files that I could remember.

It will take me a while to sort through them and remove the duplicates, but between the back-ups and what Recuva recovered, I believe I did not lose a single file in my accident. Now I can view those photos and videos and relive those moments. I'll be more careful in deleting files with my Chromebook in the future, and I'm sure glad Recuva works so well and is there when I'm not so careful. I sure wish there was a Recuva program for the human memory. 

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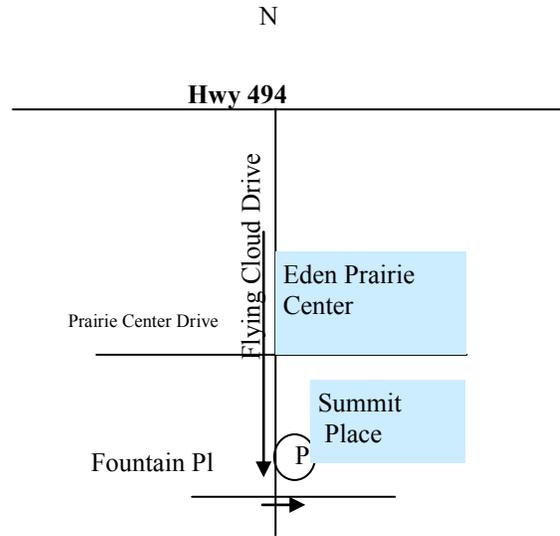
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