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

August 2019

General Meeting
Tuesday, August 13, 2019
7:00 PM

Artificial Intelligence or AI: A Webinar Primer

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

Artificial Intelligence or AI—What is it? What programs are used to create it? What can it do for us? What is it already doing for us? What does the future of AI look like? Can we create programs that use AI? At this month's meeting we will watch a webinar from an AI expert, covering those topics and answering those questions so you will walk away with a better grasp of this key technology.

Tech Topics with Jack Ungerleider leading off our meeting at 6:00 PM. Always new stuff to learn. ⌨

Note: No Special Interest Group meetings (Linux on Saturday SIG or Microsoft Office SIG) during the summer months. Look for their return in September.

The Digital Viking

Advertising

TC/PC 2018-2019 Board of Directors

Meets once or twice per year. All members welcome to attend.
Visit www.tcpc.com for meeting details.

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Upcoming Meetings

Tuesday, September 10, 2019—CyberPower Systems of Shakopee, Minnesota will present. CyberPower makes an excellent line of power strips, surge protectors, and UPC systems for computers. They have given great presentations to TC/PC in the past and often bring terrific "freebies." *Plan to bring your spouse or friend to this meeting to ensure a full audience*.

APCUG Virtual Tech Conference—August 17

VIRTUAL TECHNOLOGY CONFERENCE (VTC)
Saturday, August 17
12:00 – 3:00 PM Central Time
WEBSITE ROUNDTABLE
3:15 PM Central Time

APCUG's Virtual Technology Conferences are FREE!

Registration closes @ 11:59 PM ET on August 16

Attend using your computer, tablet or phone with the Zoom.us app.

Download the app for the device you will be using at:

https://zoom.us/download

Sessions are 50 minutes with time for Q&A

Register once via Eventbrite

You do not need an Eventbrite account to attend the conference
You do not need a Zoom account to attend the VTC

Before the event, you will receive an email with directions and links for attending both conference tracks, as well as the Let's Talk ROUND TABLE.

Day of conference, after connecting via Zoom, it is very helpful if you sign into each presentation you attend via the Chat Box; first and last name you used to register at Eventbrite.

Why? If all of the questions aren't answered during the session, the rest of the answers will be sent to you. Or, there might be a handout.

Register at Eventbrite

More information at: https://www.apcug2.org

Questions: Contact virtualconferences@apcug.org 💻

Blocks and Bits
An Introduction to Blockchain
By Joan Grace, Publicity, Northeast Ohio PC Club
May issue 2019, Nybbles & Bytes, www.neopc.org

Blockchain is a distributed, decentralized, public ledger. (Investopedia) In simple terms, if you consider a standard database, it's like a pile of credit cards on the floor of a bank vault; with blockchain, it's as if each credit card were in a safe deposit box inside the bank vault. Blockchain is a growing list of records, called blocks, which are linked using cryptography. Each block contains a cryptographic hash of the previous block, a timestamp, and transaction data. By design, a blockchain is resistant to modification of the data. (Wikipedia)

Blockchain technology promises to transform finance the way the internet transformed communication. Blockchain is the technology that runs Bitcoin. There have been technologies similar to Blockchain, but none of them combined all the three features of Blockchain: Peer-to-peer Network, Cryptography, and Proof of Work. In addition, blockchain technology can be used in other applications as well; e.g., tracking votes, registering auto titles, managing medical records.

Bitcoin is a cryptocurrency, a form of electronic cash. It is a decentralized digital currency without a central bank or single administrator that can be sent from user to user on the peer-to-peer bitcoin network without the need for intermediaries. (Wikipedia)
Bitcoin is world's first revolutionary cryptocurrency and a digital payment system. There are other cryptocurrencies as well.

Cryptocurrency is a digital or virtual currency that uses cryptography for security between individuals, and for anti-counterfeiting measures. This means users must reach a consensus about cryptocurrency's value and use it as an exchange medium. A defining feature of a cryptocurrency, and arguably its biggest allure, is its organic nature; it is not issued by any central authority, rendering it theoretically immune to government interference or manipulation.

Blockland: Cleveland is building a blockchain technology ecosystem; Blockland is a group of civic and business leaders working on making Cleveland a tech hub. The Blockland initiative exists to educate and promote real-world blockchain applications, while establishing and leading a blockchain ecosystem with support from private, public and philanthropic individuals and organizations to:

1. Educate - Provide for an emerging workforce and leaders in blockchain technology.
2. Lead - Demonstrate innovation and real-world application of technology in the Midwest.
3. Establish - Create a local ecosystem where partnerships leverage blockchain technology.
4. Promote - Blockchain has incredible potential to be inclusive in serving the greater good.

Part of the effort involves a proposed real estate deal that would create a space dedicated to housing start-ups and coders, nick-named the City Block. 💻

Digital Transducers: What?
By Phil Sorrentino, Contributing Writer, The Computer Club, FL
June 2019, http://www.scccomputerclub.org, philsorr (at) yahoo.com

Computer Input Devices are transducers. They convert the user's physical actions into commands that the computer can understand and use. Technically speaking, a transducer is a device that converts one form of energy to another form of energy. Energy types being electrical, mechanical, chemical, light, etc.

Transducers are often employed at the boundaries of automation, measurement, and control systems where electrical signals are converted to and from other physical quantities like force, torque, motion, position, etc. The process of converting one form of energy to another is known as transduction. For example, a pressure sensor (transducer) will detect pressure, a mechanical form of energy, and convert it to an analog electrical signal or digital data for display at a remote pressure gauge. But for this discussion, a transducer converts some action in our physical world to digital data to be used by our computer.

Also for the purpose of discussion, transducers can be divided into two areas, sensors and actuators. A sensor is used to detect one form of energy and report it in another form (most often an electrical signal). For example, a microphone detects sound energy (pressure differences) and reports it as electrical (analog or digital) signals. An actuator accepts energy and produces movement or an action. The energy supplied to an actuator could be electrical or mechanical. For example, an electric motor and a loudspeaker are both actuators, converting electrical energy into motion for different purposes. (If all is working well, the motor produces rotation and the loudspeaker produces sound.) Some transducers can provide both functions; they might both detect and create action. For example, a typical ultrasonic transducer switches back and forth many times a second between acting as an actuator to produce ultrasonic waves and acting as a sensor to detect the reflected ultrasonic waves. Another example might be a DC motor.

Normally electrical energy rotates the rotor of the motor, but using it another way, rotating a DC electric motor's rotor will produce electricity (a generator). And, believe it or not, the voice-coil of a speaker can also act as a crude microphone.

The two primary transducers (computer input devices) we currently use are mice (or is that mouses?) and keyboards. But, as you can tell from the large number of smartphones and tablets around, the touch-sensitive screen, or simply touchscreen, is also a very much used input device. A mouse lets the user move a pointer on a display, which allows the user to navigate and inspect the contents of a computer's file system. The mouse also lets the user launch and interact with programs. The other common device, the keyboard, translates the user's finger presses or keystrokes into text and commands that let the user interact with programs and perform a variety of functions. The newest transducer, the touchscreen, combines the functions of the mouse and the keyboard and turns finger pressure, location, and motion (gestures) into digital signals which in turn are used to control the smartphone or tablet software and hardware. Other common input devices include a microphone, a

scanner, a webcam, a trackball and a trackpad. (There was also a "pointing stick" which I've seen on some older Lenovo [used to be IBM] and Dell laptops. If you'll recall, the pointing stick was a device that was used on a laptop mounted in the keyboard, usually between the G, H and B keys. Applying horizontal pressure on the pointing stick moved the cursor, up down, left, and right. Using the pointing stick was a little tricky, because the velocity of the movement of the cursor was proportional to the pressure applied to the pointing stick. As far as I can see, pointing sticks are not used any more, probably because the trackpad is easier to use, and more than likely, cheaper.)

Newer touchscreens can track the position and motion of more than one finger, sometimes as many as four fingers. These devices can support a wide range of gestures for navigating, launching, and performing other functions. Here are a few multi-finger gestures that can be used with Windows 10: Swipe three fingers up to see all of your open apps; Swipe three fingers down to show the desktop. Other gestures supported by Windows 10 are: Tap on the touchpad to Select an Item; Pinch in or stretch out two fingers to Zoom In or out; Place three fingers on the touchpad and swipe right or left to Switch between open windows.

One of the newest transducers being used for control may be one of the oldest transducers around; the microphone. The microphone, which converts voice (changes in air pressure) to digital signals, is being used in Voice Control systems like Cortana in Windows 10. Cortana is an App with which you can use your voice to make a call, send a text message, search the web, or open another App. Cortana can even help you: schedule a meeting, set a reminder, and get up-to-date weather or traffic. (Tap three fingers on a touchpad to open Cortana.)

There are also some specialized input devices like game controllers, graphics tablets, and motion-sensing devices. Microsoft made a motion-sensing device called Kinect, which used a combination of a microphone, video camera, infrared light emitter, and infrared sensors to detect user's voice commands and motion. .Moving our bodies and speaking is fundamental to our nature, so Microsoft advertised that "Kenect allowed a computer user to interact with the computer without the need for a game controller, through a natural user interface using gestures and spoken commands." (Note from Microsoft: Manufacturing of the Kenect sensor and adapter has been discontinued, but the Kenect technology continues to live on in products like the HoloLens, Cortana voice assistant, the Windows Hello biometric facial ID system, and a context-aware user interface.)

Another, not so common, input device is a MIDI keyboard, which is typically a piano-style device used to create and record music by sending music signals over USB to a computer. The MIDI keyboard does not produce sound, but rather the digital signals that it produces from the user's finger movements are converted to sound in the computer by a software program. There are even some very specialized and very complex input devices used in medical imaging systems. Some of these are computed tomography (CT) scanners, magnetic resonance imaging (MRI) scanners, and positron emission tomography (PET) scanners. All of these specialized devices are designed to convert changes in physical

world parameters to digital data in order to let physicians see internal body structures such as tendons, muscles, joints, vessels, and organs beneath the skin to diagnose and treat injuries and illnesses. So, as you can see, transducers play a pretty big role in letting our computers interface to us and our real world. 🖳

Interesting Internet Finds - June 2019
By Steve Costello
scostello (at) sefcug.com

While going through the more than 300 RSS feeds, I often run across things that I think might be of interest to other user group members. The following are some items I found interesting during the month of May 2019.

Find Free Images with CC Search
https://lifehacker.com/find-free-images-with-cc-search-1834442069

Even though I no longer edit a newsletter, I am still looking for images I can use for free on my blogs. This post explains what is available from CC Search and how to filter to get the most relevant results.

How Much RAM Does a Chromebook Really Need?
https://www.howtogeek.com/413556/how-much-ram-does-a-chromebook-really-need/

My granddaughter just graduated from High School and is planning to start college in the fall. She has been using a Chromebook at school since 6th grade. She is going for the college orientation in a few weeks and will find out what she will need there. If it is a new Chromebook, this post provides information to get her a new Chromebook at the best level and pricing. It is worth checking out even if you are only getting a Chromebook for yourself.

What You Need to Know About DuckDuckGo
https://www.groovypost.com/howto/what-you-need-to-know-about-duckduckgo/

This post is one of the most informative I have seen regarding the DuckDuckGo search engine. I have been using DuckDuckGo exclusively for a while now, even on my Androids as the default search engine. Check this out and then make DuckDuckGo your default search engine too.

Make Google Calendar More Useful with These Free Calendars
https://www.maketecheasier.com/make-google-calendar-useful-with-free-calendars/

If you use Google Calendar as I do, it is nice to add some free calendars to make it more useful. I added the weather calendar to mine after reading this post.

"Is there any way to charge a phone faster?"
https://langa.com/index.php/2019/05/07/is-there-any-way-to-charge-a-phone-faster/

Just about everyone I know has a smartphone these days. I am sure if you do, you want to know how to charge it the fastest way. If that is the case for you, read this post.

Is an Up-to-Date Browser Secure on an Out-of-Date OS?
https://askleo.com/is-an-up-to-date-browser-secure-on-an-out-of-date-os/

I know that just as with XP there are going to be some who will not move off of Windows 7 even after it no longer receives updates. Leo Notenboom addresses some of the issues that will come up.

How to Add Dropbox To Your Chromebook
https://www.simplehelp.net/2019/05/13/how-to-add-dropbox-to-your-chromebook/

I know there are a lot of Chromebook users out there now. If you are one and would like to use Dropbox, check out this post to learn how to add it to your Chromebook.

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Internet of Things Data Tracking
By Jeff Wilkinson, Present, Sun City Summerlin Computer Club, NV
June 2019 issue, Gigabyte Gazette, www.scs-cc.com
pres.scscc (at) gmail.com

As I continue to delve into the ramifications of targeted marketing and how it might affect us in our everyday lives, I'm diverted to the Internet of Things (IoT). A little research on IoT and how data from seemingly innocuous devices could be collected and used, proved enlightening, with a tremendous amount being written on this subject.
How will this data flow through the various collection systems? Will data be captured in real time or transmitted in anonymous batches? How will it be used, and who will have access to the purportedly anonymous data sources? Devices supplying data could include fitness wearables, various accessories in cars, IoT equipped appliances, such as refrigerators, washers, dryers, health trackers, Smart TV's, security cameras and devices, web connected eyeglasses, and the list goes on.

Table 1: IoT Units Installed Base by Category (Millions of Units)

Category	2016	2017	2018	2020
Consumer	3,963.0	5,244.3	7,036.3	12,863.0
Business: Cross-Industry	1,102.1	1,501.0	2,132.6	4,381.4
Business: Vertical-Specific	1,316.6	1,635.4	2,027.7	3,171.0
Grand Total	6,381.8	8,380.6	11,196.6	20,415.4

Source: Gartner (January 2017)

IoT devices will outnumber the world's population this year for the first time. A recent study indicated that over half of those surveyed would be willing to receive some ads.

This, of course, indicates that some form of data tracking is needed, not only of our computers and phones, but of the fitness monitors used to track our physical activity, the refrigerators monitoring our supply of milk, or the processor in our new car monitoring our driving!

Much of the data can be used for non-nefarious purposes, such as product improvement and future product development. But will some of this data be used to extrapolate future drug health care needs, based on current fitness monitor feedback data? Will this data find its way into insurance actuarial tables? And, of course this data will be used for more fine grain targeted marketing. The management of this data has, in fact, spawned new companies who will monetize this valuable data. It will be another learning experience, as hopefully the public is able to decide what is acceptable and what is not.

On the plus side, IoT can help create Smart Homes and improve machine efficiency, such as heating and cooling devices. IoT can be used in wearables for security and identification, health monitoring and reporting, smart retail and inventory control, optimization of farming, and supply chain activities, to name a few.

Many positive things come out of the use of IoT data, such as Rolls Royce using this data, along with artificial intelligence (AI), to create business benefits to customers and improve their products. They have created "Data Innovation Cells" which use collected data to test new ideas to improve performance, maintenance cycles, and safety, and develop product improvements. It is certain that data from IoT connected devices will unlock efficiencies, spawn innovation, and lead to meaningful insights of all kinds!

So, the IoT is actually being used in numerous positive ways, and engineers are just beginning to see all the potential benefits. Of course, putting sensors and retrieving feedback from every process can result in an overabundance of data, which may or may not prove useful. While all of this can be viewed as an overwhelming invasion of privacy, it can also be looked at as an exciting step forward and a world full of new opportunities, with positive outcomes around every corner!💻

Is the CPU the PC Shopping Key?

News and/or opinion from Paul Baecker, Editor, Sterling Heights Computer Club MI
June 2019 issue, WYSIWYG, www.shcc.org
newsletter (at) sterlingheightscomputerclub.org

With the pending demise of all Microsoft support on January14, 2020 for what is possibly their best operating system to date (Windows 7), many users will be shopping for a new PC as one of their solutions. Another solution could be to install Linux onto that Windows 7 PC as a 'dual-boot' configuration, so that the user can safely surf the web using the Linux boot option, but still maintain the Windows partition with needed Windows applications (just don't go web surfing with it).

If a new PC is the choice, how to go about it? Well, I look at buying a new computer sort of like buying a new car (or SUV if we believe the trends). What is the first thing about a new vehicle that we think of? I'd say it's the engine. You can select a 4-cyl or 6-cyl or hybrid or electric motor. But once you buy it, can you return to the dealer and switch it if you have second thoughts? Nope. I look at this akin to choosing a PC with a particular CPU. Generally, you can't switch the CPU (OK, you extreme tekkies, this column isn't for you!) once you make your purchase. You can usually increase the RAM or switch from an HDD to an SSD, and such things that enhance the PC's performance, but you're stuck with the CPU performance that came with that sparkling new PC.

When you see 5 PCs on the store shelf, all with the same price, how to choose? How to select the 'right' PC, despite what the over-anxious salesperson might push you into buying? A little homework, that's how. The www.passmark.com web site is your new pal. It compares relative performance among over 2700 CPUs from Intel and AMD. AMD is Intel's primary PC CPU competitor, and a CPU brand certainly worth considering (the two manufacturers keep leapfrogging over each other with new CPU technologies — Intel just advertises more, and you pay for that treat). The site also has other hardware benchmarking features (RAM, video cards, drives, much more), but we'll stick to CPUs in this article.

To check the overall performance of a CPU on passmark.com (which is a FREE site), you do this:

- Go to www.passmark.com
- Select Benchmarks from the menu and then down to CPU Benchmarks.
- Click on the "Search for your CPU model" selection.
- The heading will be "CPU List". Below that, "Single CPU Systems."
- To the right of that, there is an empty box, with a "Find CPU" button next to it. This is where you'll enter the CPU model for which you want a ranking.

For example, a PC you're interested in contains an "Intel Core i7-8565U Processor at 1.8GHz" processor. Copy/paste the processor model (in this case, "i7-8565U") into that box (without the quotes). A greyed box will open, listing all of the processors that pertain to that model (for example, there could be something like an i7-8565UX model, too). It will list all of the CPUs in the same model family. For this 8565 CPU, there is

only one model. The site is a bit finicky. You need to enter the proper CPU ID including a dash — for example, like i7 (for Intel) or A10 (for AMD), and then the model number, usually with a dash between them — in order for the site to display it. Keep trying — you'll get the hang of it quickly.

Click on the selection to get it entered in full in the box that was previously empty. It'll look like this:

Then you can click on the Find CPU button, and you'll see the resulting ranking:

So, the CPU in this PC is ranked 387 for overall performance among about 2700 listed CPUs. Remember that "1" is the CPU with the highest overall performance (you can click on "Rank" at the top of the listings to see everything in performance order — you can sort on any of the columns there). A ranking above 400 is pretty darned cool these days and will all-but-promise you a high-performing PC for many years to come.

This web site has many other features, but in my opinion, this CPU-performance ranking is the most useful to typical PC shoppers. The site can also compare up to three CPUs at a time. Clicking on any of the CPUs in the list will display windows with additional qualities — power consumption, number of cores, clock speeds, pricing (which changes day-to-day), and more.

So, when you visit a store (or a retail web site) and observe so many PCs available to

your wallet, consider making notes of the various CPUs in PCs in your price range. Peruse their overall performance on this site.

Also consider upping your price range just a bit to get a much-higher-rated CPU, knowing that later you can alter those other PC components to enhance that PC (RAM,
drive, etc.). Then go shopping. Some stores offer a return period with a full refund (avoid stores with so called 'restocking fees'!!!), so that you can test drive your new digital toy at home, particularly useful since you really cannot put any PC to the test in a store.

Just ask about it.🖥

Need to email a big file? Try Firefox Send
By Steve Shank, Board of Directors and Steering Committee, Golden Gate Computer Society, CA
April 2019 issue, GGCS Newsletter, www.ggcs.org, editor (at) ggcs.org

Almost all email providers have a size limit for attachments. If you need to send someone large files too big for email attachments, or you want to encrypt the files for privacy, Mozilla is offering a better, easier way to do this compared with uploading to Google/Dropbox/etc., then following up afterward with the recipient to see when it is okay to delete the files from where they were temporarily stored.

Go to send.firefox.com using any browser; it does not need to be Firefox. No need to signup if your file(s) are less than 1GB per transmission. If you do sign up, the limit goes up to 2.5GB per upload. Your files are uploaded to the cloud and disappear after X downloads or X minutes/hours/days.

You receive a link you can email to the recipient. If you choose to encrypt the file, you also need to provide the recipient the password, preferably using a separate channel (phone, text, etc.) 🖥

Special Interest Groups (SIGs)

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.tcpc.com

Board of Directors*
All members are welcome! Check www.tcpc.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 Kuhlmey   952/934-8492
                          skuhlmey@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 Kuhlmey   952/934-8492
                          skuhlmey@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.tcpc.com

August

Sun	Mon	Tues	Wed	Thu	Fri	Sat
			31	1	2	3
4	5	6	7	8	9	10
11	12	13 7pm General Mtg: Artificial Intelligence 6pm Tech Topics	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

September

Sun	Mon	Tues	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10 General Mtg Cyberpower Systems 6pm Tech Topics	11	12	13	14 9am-Noon Linux on Saturday
15	16	17	18	19	20	21 9am-Noon Microsoft Office (including Access)
22	23	24	25	26	27	28
29	30					

Twin Cities PC USER GROUP

You have just read an issue of The Digital Viking.

Would you like to receive this delivered directly to your email or business each month?

As a member of TC/PC, the Twin Cities Personal Computer Group, one of the benefits
is reading this monthly publication at www.tcpc.com..

As a member of TC/PC, you may attend any or all of the monthly Special Interest Group (SIG) meetings and be eligible for
software drawings. The small membership fee also includes
access to real-live people with answers via our helplines, discounts, and various other perks.

Does membership in this group sound like a good way to increase your computer knowledge?

It's easy to do! Simply fill in the form below and mail it to the address shown.
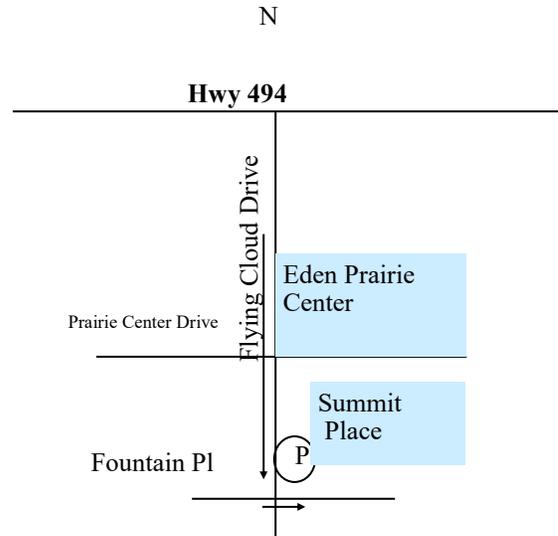(If you use the form in this issue, you will receive an extra month for joining now.)

Here's the info for my TC/PC Membership:

Full name_____

Company name_____

Address_____

City_____ State_____ Zip_____

❍Home ❍Business ❍Change address: ❍Perm. ❍Temp. 'til _____

Home phone_____ Work phone_____

Online address(es) _____

Where did you hear about TC/PC? _____

❍ I DO NOT want any of my information disclosed.
❍ I DO NOT want to receive any mailings

Administrative Use Only   Rec'd_____ Chk#_____

8/19

I'm signing up for:

❍ Individual/Family Membership ($18)
❍ Business Membership ($100)
If an existing member your # _____
Make checks payable to:
Twin Cities PC User Group
341 County Rd C2 W
Roseville, MN 55113

http://www.tcpc.com

❍ Check #_____ ❍ Bill me
❍ New member ❍ Renewal ❍ Prior member
I'm interested in:
❍ Training classes ❍ Volunteering
❍ Special Interest Groups: New User, Access, etc.
List here:

August 13, 2019
General Meeting 7:00 PM

Artificial Intelligence or AI:
A Webinar Primer

Summit Place
8505 Flying Cloud Dr.
Eden Prairie, MN 55344

More info and map: www.tcpc.com

N

Hwy 494

Flying Cloud Drive

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