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for over 40 years

# Artificial Intelligence: fun and useful tips

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The presentation is available  
for downloading as a PDF file

<https://opcug.ca/opl/ai.pdf>

AI news

<https://opcug.ca/opl/ai-news.pdf>

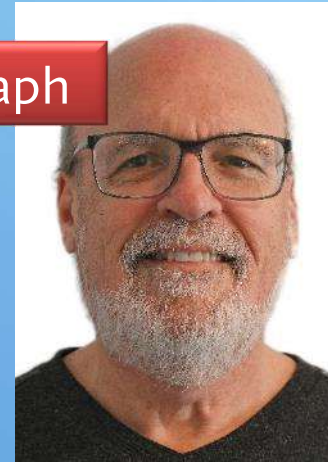


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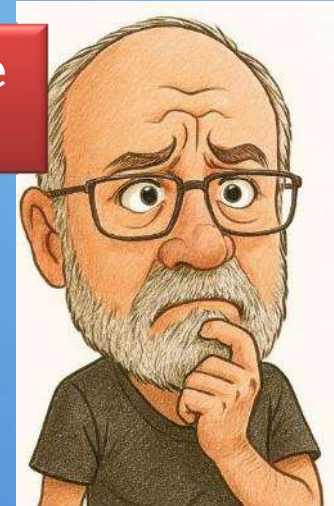


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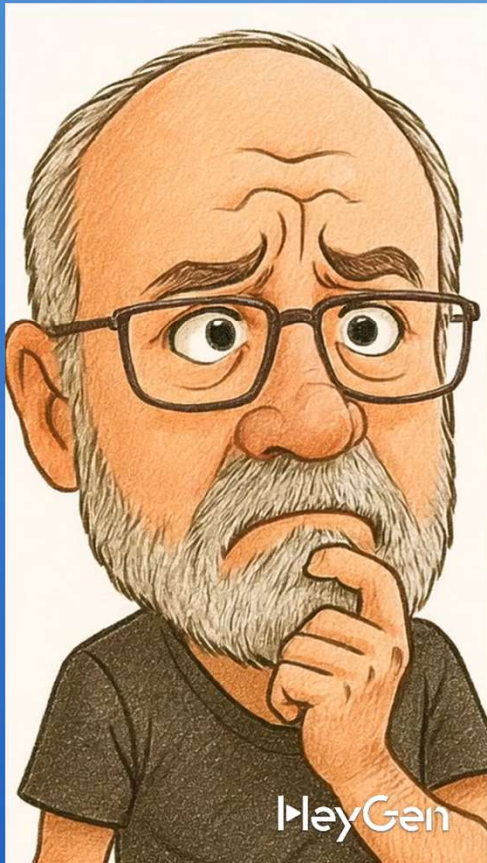
Took a photograph



Generated a caricature  
using ChatGPT



Used caricature to generate  
video using HeyGen



All for free!

# Agenda

- Different types of Artificial Intelligence
  - generative AI vs. predictive AI
- Examples
  - text to image & image to text
  - generate text & email responses
  - learn to use software
  - summarise videos & text
  - text to video
  - create a song
  - when hallucinations are problematic
- What is coming *or maybe already here?*
- Resources (& extras in downloadable PDF file)



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## **Different types of Artificial Intelligence**



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# Generative AI



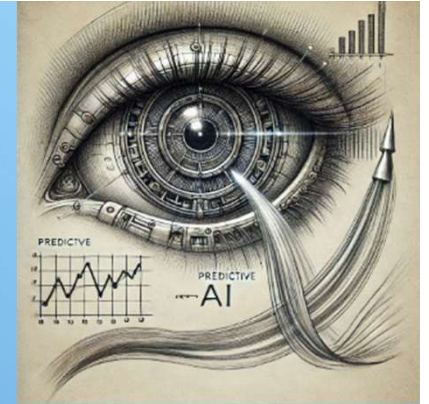
- Generate new content
  - text, images, letters, poetry or music, & much more
- Excels at creative & open-ended tasks
- Trained on humongous amounts of data
- Generative AI is not transparent or explainable
  - may be what gives rise to hallucinations
- For best results, give lots of context—even ramble—when prompting
  - <https://www.computerworld.com/article/3853747/the-secret-to-using-generative-ai-effectively.html>
- ChatGPT may be best-known example of generative AI

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# Predictive AI



- Focuses on up-to-date, factual information
- Can produce forecasts & probabilities, based on past data
- Can detect patterns and make recommendations
- **Perplexity.AI may be best-known predictive AI**

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# Is AI a magic box?



- Can you:
  - ask AI for the answer to any question?
  - ask AI to generate any new content?
- Works that easily...sometimes
- But...AI can give:
  - incomplete answers
  - confident, plausible sounding answers...*that are wrong!*
  - hallucinations – *completely false information*
- Don't blindly trust AI: *always verify*
- **No one AI always produces the best results**
  - try different tools

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**Text to image**



# Image generation

## ■ Many AI tools for image generation



- Microsoft **Copilot**

- <https://copilot.microsoft.com>



- OpenAI **ChatGPT** (was DALL-E for image generation)

- <https://chatgpt.com/>



- Google **ImageFX**

- <https://labs.google/fx/tools/image-fx>



- Google **Gemini**

- <https://gemini.google.com/app>



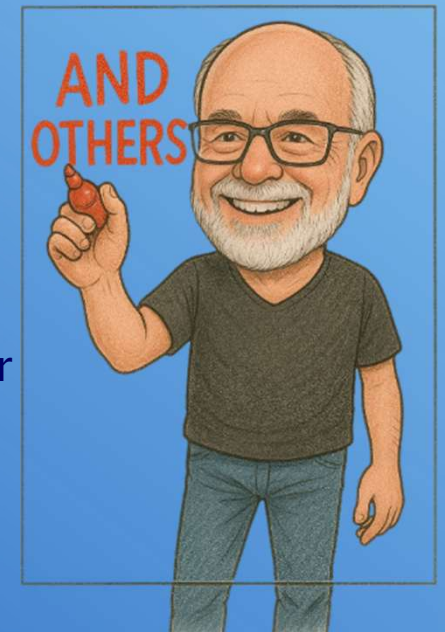
- **Perchance AI Image Generator**

- <https://perchance.org/ai-text-to-image-generator>



- **Ideogram**

- <https://ideogram.ai/t/explore>



# Challenges

- All text to image AIs have challenges
- Sometimes *wonderfully successful*
  - highly detailed
  - realistic
- Sometimes *spectacularly unsuccessful*
  - not reflecting text prompt
  - strange artifacts
- **Don't place too much faith in any one AI tool!**



# Gemini 2.0

May 2025

*Colored pencil sketch of a green checkmark with "Success" beside a red X with "Failure"*



*Make sure the words are spelled correctly*



*Make sure all letters are formed correctly*

- Gemini gave up on words
- added pencils for some reason





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# Microsoft Copilot

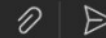
May 2025

Sketch of a little boy and his parents walking out of an ice cream shop. It is midday on a bright sunny day. The little boy has an ice cream cone and is crying because the ice cream has fallen from the cone. His parents are comforting him. They are all facing the viewer and you can see thier faces.



Make the cone empty because the ice cream has fallen on the ground

66 / 16000



I'll make sure the cone is empty because the ice cream has fallen on the ground.

Only asked for change in ice cream

- everything changed

Except the ice cream!





# Rapid evolution

Sketch of a little boy and his parents walking out of an ice cream shop. It is midday on a bright sunny day. The little boy has an ice cream cone and is crying because the ice cream has fallen from the cone. His parents are comforting him. They are all facing the viewer and you can see their faces.

Same prompt as before

Gemini  
2.0 Flash

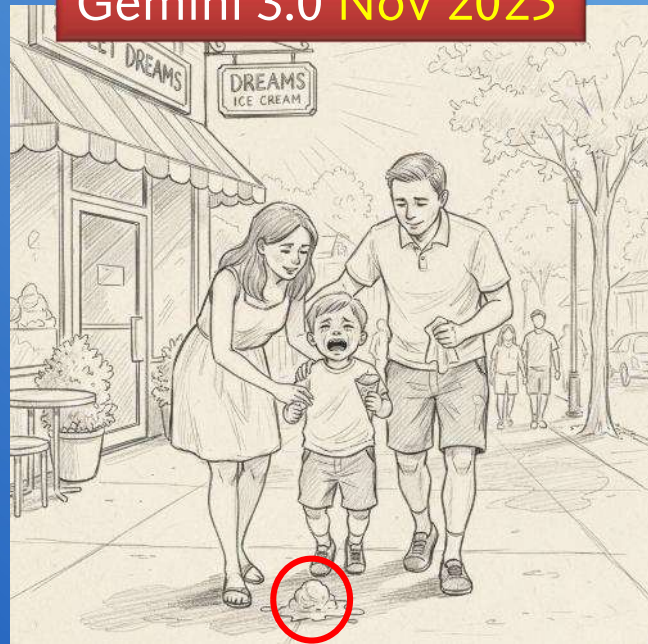
Gemini 2.0 May 2025

I'm still learning how to generate certain kinds of images, so I might not be able to generate what you're looking for yet. Also, I can't help with photorealistic images.

Gemini 2.5 July 2025

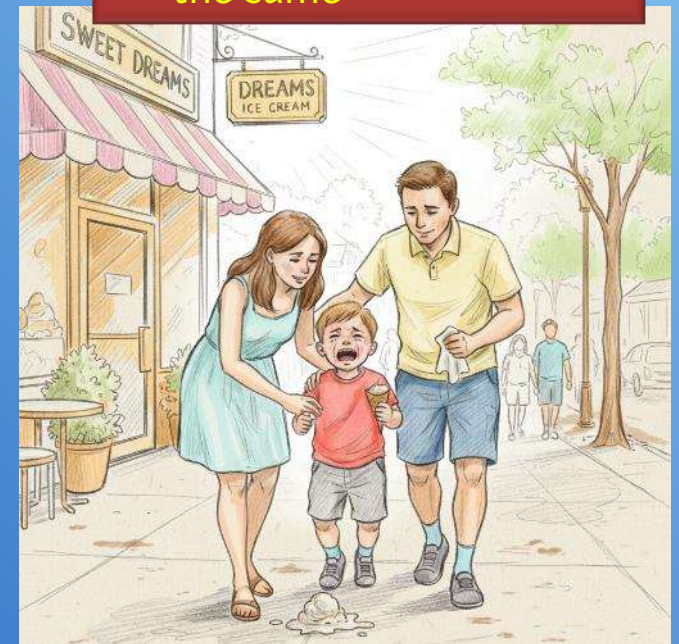


Gemini 3.0 Nov 2025



*Make it a color sketch*

- everything else stayed the same





# Perchance AI

May 2025

Description ⓘ

Photo-realistic scene of a beach with many people playing. People are barbequing. Kids are playing in the sand and in the water. The year is 1956 and there are period cars in the parking lot. The sun is bright. There is a canoe close to shore., aerial shot, warm color grading

Add shot... ▾

Add color... ▾

Add effect... ▾

⊘ Anti-Description (optional) ⓘ

things you **don't** want in the character

Art Style

Professional Pho ▾

Shape

Landscape ▾

How many?

6 ▾

generate

Pretty good results  
(*at first glance*)

- beach
- 1956 period cars
- bright
- aerial shot



But some oddities





ideogram

Nov 2025

What will you create?



Photo-realistic scene of a beach with many people playing. People are barbequing. Kids are playing in the sand and in the water. The year is 1956 and there are period cars in the parking lot. The sun is bright. There is a canoe close to shore. Aerial shot, warm color grading.

3.0 Default x 4

4:3

Style

Character

Color



On

Public

Generate

Same prompt  
as before





# ImageFX text to image

ImageFX

A man is watching a large-screen TV. The scene on the TV is of a surfer. The water from the wave is spilling out of the TV and into the room. The man watching the TV is surprised and raising his feet up so they can stay dry. The room is very bright . The view is from the side so you can see both the man's face and the surfer coming out of the TV



More

35mm film

min

handmade

abstract

I wanted to see if AI could generate an image it would never have seen examples of before

- *...water from the wave is spilling out of the TV*







 ChatGPT

 Gemini





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ChatGPT

## Image+text to image

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Upload files and more



Search

Reason

...

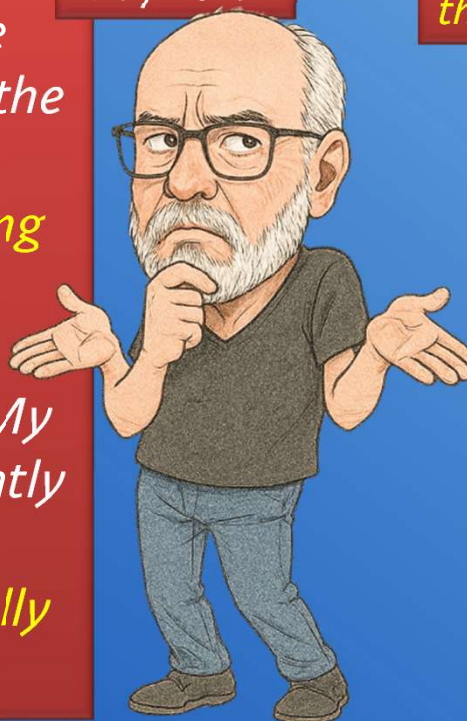


ChatGPT can make mistakes. Check important info.



Create a color line drawing caricature  
The entire body from head to feet is visible.  
The head should be about one quarter the size of the entire body. I am pondering something very seriously and my brow is furrowed. My body is turned slightly to one side. I am shrugging like I really have no idea.

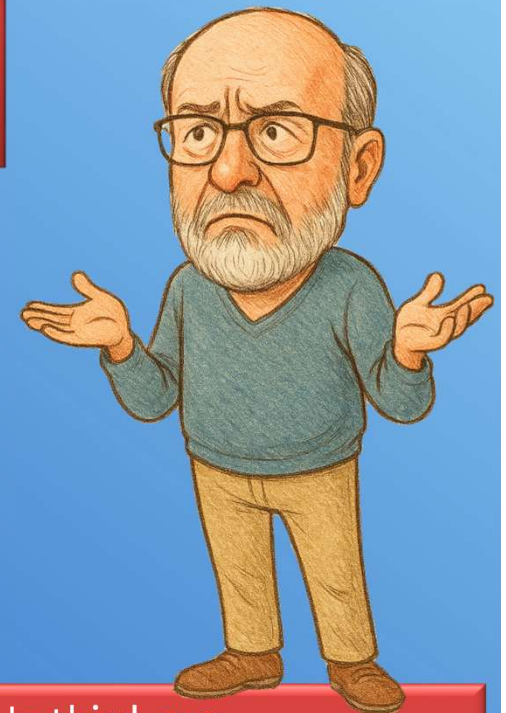
May 2025



Remove the third arm and hand. Keep everything else the same



Nov 2025



No third arm

- able to make adjustments without other changes

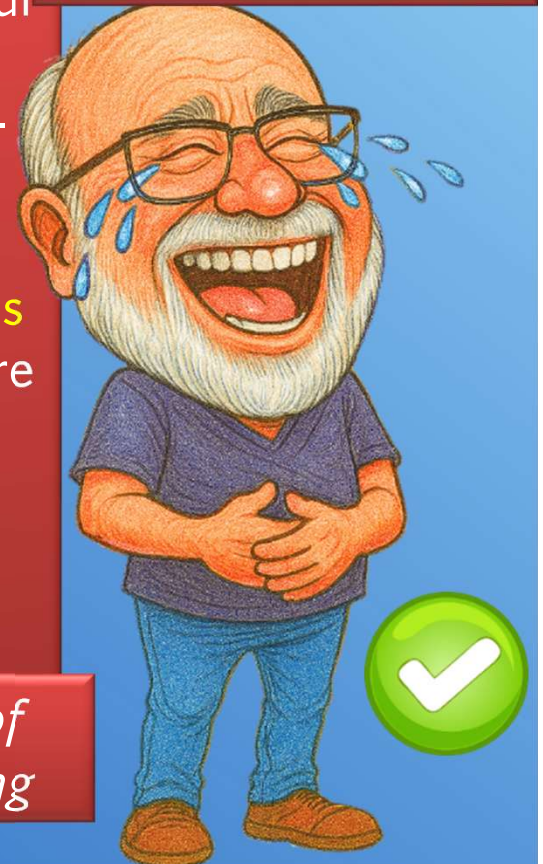
# Use ChatGPT to generate prompt

*Create a prompt to create a caricature from an uploaded photo showing me laughing so hard that I am crying. It should be very evident I am finding something very funny.*



Create a color line-drawing caricature based on the uploaded photo. I should be depicted laughing so hard that I'm crying — **tears rolling down my cheeks, mouth wide open** in a big joyful laugh, **eyes squinting or closed** from the intensity of the laughter. My **head should be exaggerated in size** (about one-quarter of the full-body height), as is typical in caricatures. The expression should make it very obvious that I'm finding something extremely funny — **maybe add subtle motion lines or facial flush** for extra effect. The background should be pure white. **Show my entire** body from head to feet. **Arms can be** either at my sides, **holding my stomach**, or playfully thrown back in laughter. Keep the **pose natural and expressive**. Let me know if you want to include props, speech bubbles, or specific clothing!

Copilot Nov 2025  
(AI model: *Think deeper*)



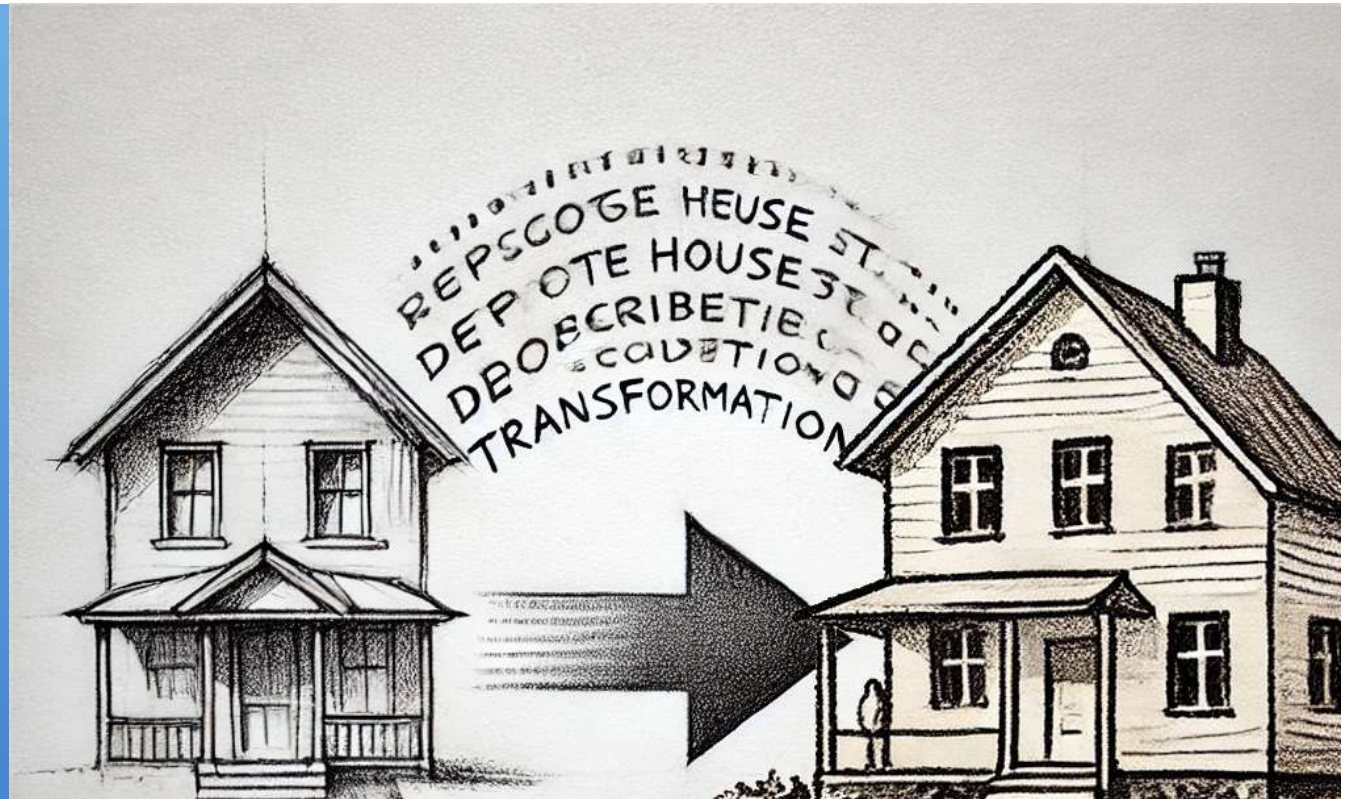
**Remember:** *for best results, give lots of context—even ramble—when prompting*



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## Image to text...and back to image

- useful when you want an image similar to another



# Image to text to image using ChatGPT

- Wanted a pencil sketch similar to photo of my son





# Step 1: image to text

What can I help with?

Message ChatGPT



Search

Reason

Upload files and more

Upload image

What can I help with?



analyze image



Search

Reason



analyze image

This image shows a musician playing a 12-string acoustic guitar inside a guitar shop. The setting is warm and inviting, with multiple acoustic guitars displayed on a wooden wall behind a glass case. The musician is dressed in a black pinstriped jacket, a black hat, and dark jeans, giving off a stylish, possibly blues or folk-inspired look.

Key observations:

- The musician is deeply focused on playing, with his fingers positioned on the fretboard and his strumming hand in motion.
- The lighting is warm, enhancing the natural wood tones of the guitars.
- The guitars in the background vary in style and price, indicating a professional or high-end music store.
- There is a reflection in the glass case, adding depth to the image.
- The musician's attire and expression suggest an artistic or passionate connection to the instrument.



# Step 2: text to image

What can I help with?

Color pencil sketch of a musician playing a 12-string acoustic guitar inside a guitar shop. The setting is warm and inviting, with multiple acoustic guitars displayed on a wooden wall behind a glass case. The musician is dressed in a black pinstriped jacket, a black hat, and dark jeans, giving off a stylish, possibly blues or folk-inspired look. The musician is deeply focused on playing, with his fingers positioned on the fretboard and his strumming hand in motion. The lighting is warm, enhancing the natural wood tones of the guitars. The guitars in the background vary in style and price, indicating a professional or high-end music store. There is a reflection in the glass case, adding depth to the image. The musician's attire and expression suggest an artistic or passionate connection to the instrument.

+ Search



Here is the colored pencil sketch of the musician playing a 12-string acoustic guitar inside a warm and inviting guitar shop. Let me know if you'd like any adjustments!

Pasted in analysis of original photo

- “Color pencil sketch of...”
- could have edited further

make it a black and white sketch and make it less detailed



Here is the black and white pencil sketch with a more minimalistic style. Let me know if you'd like any further adjustments!

# Hallucinations





Realistic, woman relaxing on beach *looking at the water*

– Stable Diffusion





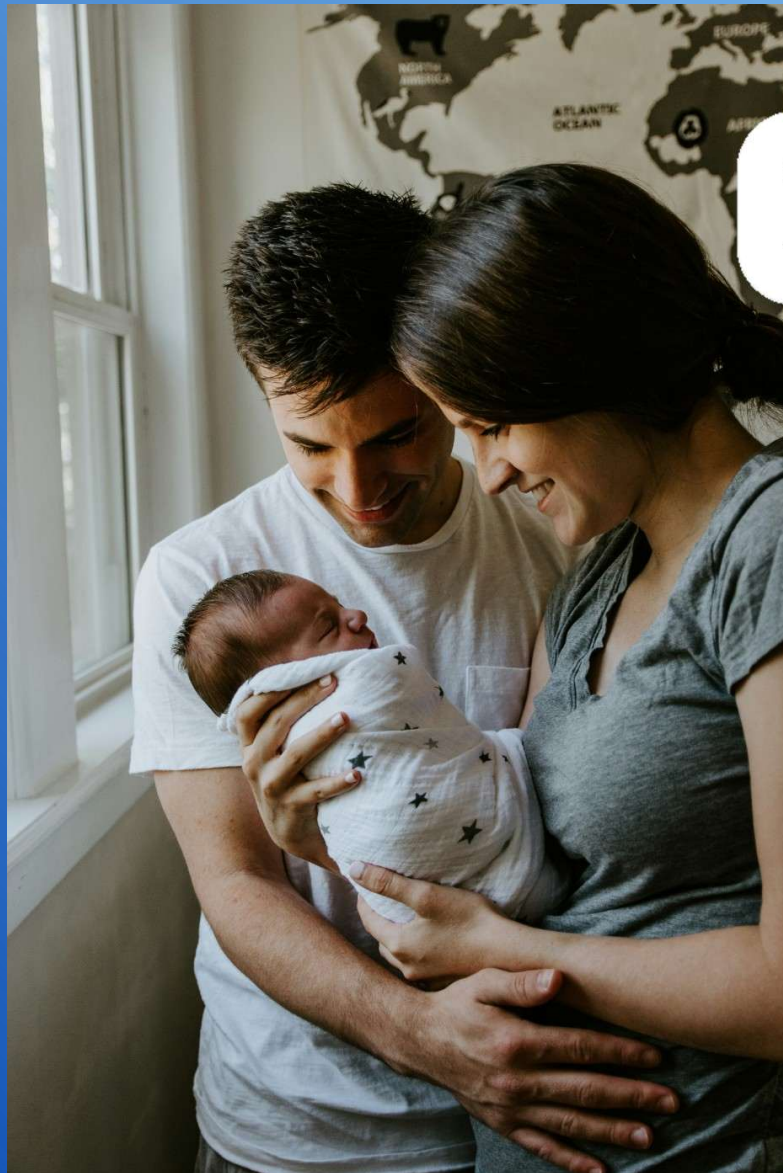
Midjourney

An empty room with no elephants. Not a single elephant in sight.





# Editing photographs



Remove the man



Tools

Fast



Gemini 3

• Dec 2025





Remove the buildings and the  
telephone poles near the bottom



 Tools

Fast ▾



Gemini 3  
• Dec 2025







Remove power lines, the building on the right, and the sign and post on the left side of the church



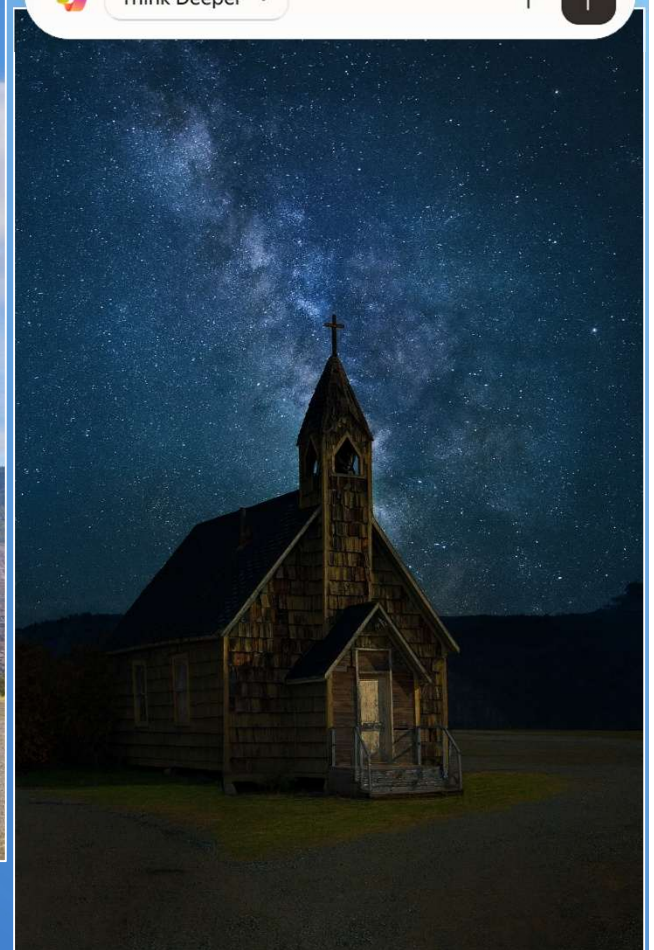
Smart (GPT-5.1) ▾



Make it a night scene with the Milky Way in the sky



Think Deeper ▾



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# A little ChatGPT fun

Uploaded photo



Added prompt

- *Create a picture of me as a 3D action figure toy, displayed in a transparent plastic package. Add a beanie cap with a propeller. Add accessories such as a computer, monitor, mouse, and keyboard. Name the package "Chris Taylor" and note that I am a computer geek. Add email address "Chris.Taylor@opcug.ca"*





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# Adding graphics to your projects

## COMMUNITY CENTRE BAKE SALE!



Join us for a delicious community event filled with homemade treats, friendly faces, and fun!



**Date:** September 12, 2026



**Time:** 1:00pm–4:00pm



**Location:** Main Street Community Centre  
31 Main Street, Willow Cove

Enjoy:

- Fresh-baked cookies
- Cakes, pies & pastries
- Coffee & tea

All proceeds support community programs and activities

**COME FOR THE SWEETS — STAY FOR THE COMMUNITY!**

## Text generated by AI

- *Text for a poster about a bake sale at a community centre*

- *Sketch of a bake sale. A table with baked goods. Women are behind the table, selling. People are at the table buying and eating goodies.*

## Business card

- *Silhouette of a man standing behind an old-fashioned view camera on a tripod.*

**Chris Taylor**

**Old-timey Portraits**

*Specializing in old-fashioned photos  
by appointment only*

Chris.Taylor@opcug.ca  
613-555-2435





# Want a 3-legged man

Uploaded image from camera ad about image stabilization

- *High-quality, photo-realistic image similar to the upload depicting a man with three legs. The legs are acting as a photographic tripod, steadying his photography. The legs are spread evenly around his body and exit his body in a natural fashion.*

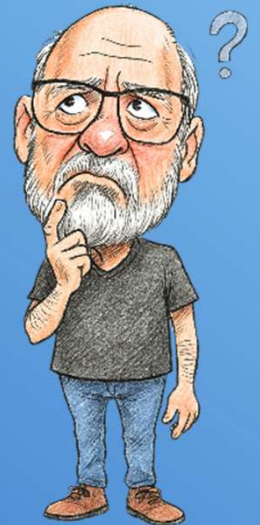


Result



Copilot

Nov 2025



## Analyse image



The image shows a person standing on a rocky mountaintop, taking a photograph with a camera. Here are the key elements

- Scene & Environment
  - The setting is a mountainous landscape with snow-covered peaks visible in the background.
  - The sky is filled with large, dramatic clouds, giving the scene a cinematic feel.
  - The ground where the person stands is rocky with patches of grass.
- Person & Activity
  - The individual appears to be engaged in outdoor photography, holding a camera up to their face.
  - They are wearing:
    - A light-colored long-sleeve shirt, jeans, & hiking boots
    - A backpack — suggesting they are on a hike or photography expedition.
  - Their stance is stable and wide, indicating they are bracing for a shot.
  - Overall Impression: The photo conveys a sense of adventure, exploration, and nature photography. The warm lighting and dramatic clouds add a moody, atmospheric tone.

## What about his three legs?

It *does* look like he has three legs at first glance — but it's just an **optical illusion**.

What's happening in the image

- The person **has two normal legs**.
- The “third leg” effect comes from a **dark vertical shape behind his right leg**, likely
  - A **shadow**, or
  - A **piece of rock** or natural feature that lines up perfectly with his stance.

Because the colors and textures are similar to his pants, **your eye interprets it as another leg**.

**In short:** He's not tripodal — the environment just created a perfect visual trick.



*The three legs are not an optical illusion. Give the man three legs that look like a tripod.*



Result



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# Text – image conclusions

- **All** text to image AI tools
  - sometimes an exercise in frustration
    - hit-and-miss
    - may not include aspects in prompt
    - spelling mistakes
      - getting better
- Decent results if you keep trying
  - elaborate in follow-up prompts
  - use AI to generate your prompt
- Image to text to image
  - have AI analyse an image you upload
    - get detailed description
  - massage description to suite needs
  - use AI to create image from text



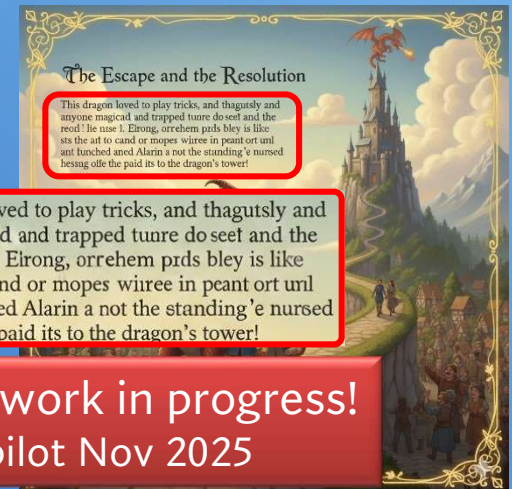
Bing Image Creator

• Dec 2025



Gemini

• Dec 2025



This dragon loved to play tricks, and thagutlsy and anyone magica'd and trapped tunre do seet and the reod! lie nise l. Elrong, orrehem prds bley is like sts the art to cand or mopes wiiree in peant ort unl ant lunched aned Alarin a not the standing'e nursed hessng offe the paid its to the dragon's tower!

Still a work in progress!

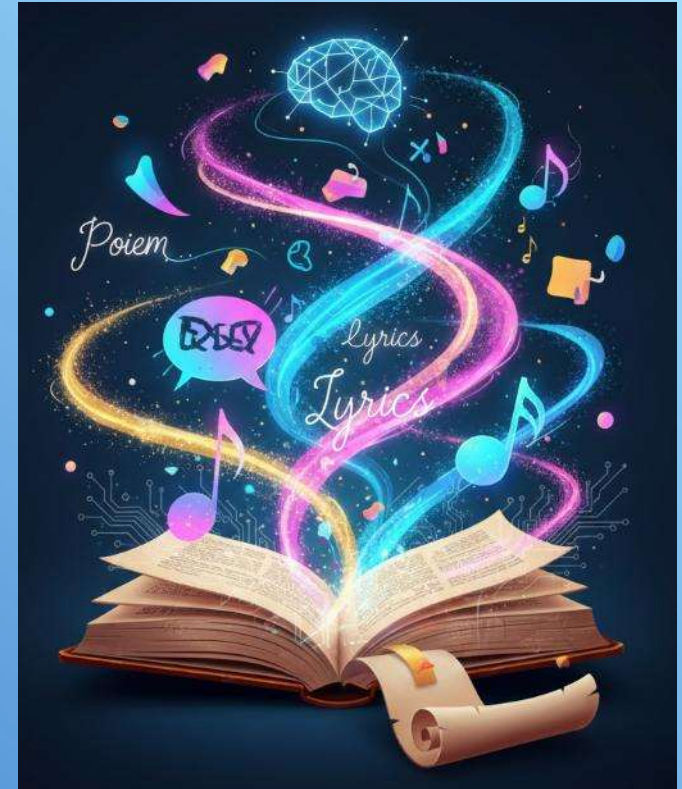
• Copilot Nov 2025



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# Generating creative text works

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# Embrace hallucinations!

AI is known to hallucinate and  
make things up

Why not play to its strength and  
let it create a story!







Expand storyline

Here's a whimsical, bedtime-ready storyline you could use 🌙 ✨

**Storyline: *The Prince, the Maiden, and the Dragon's Tower***

**Setting**

In a faraway kingdom, a towering castle sits atop a mountain, guarded by a mighty dragon. The dragon isn't just fierce—it's clever, keeping anyone who dares approach trapped inside its enchanted lair.

**Characters**

- **Prince Alaric** – Brave, kind, and clever. His strength lies not only in his sword but in his heart and quick thinking.
- **Maiden Elara** – Strong-willed, resourceful, and courageous. Though trapped, she has been secretly studying the dragon's habits and weaknesses.
- **The Dragon** – Huge, fiery, and cunning. It believes no one can outsmart it.

**Plot**

1. **The Call to Adventure**  
Prince Alaric hears of Elara's plight and sets out to rescue her. But instead of charging recklessly, he listens to the villagers' stories and prepares carefully.
2. **The Meeting**  
When Alaric reaches the tower, he finds Elara not frightened but determined. She has already mapped out the dragon's routines and knows when it sleeps, eats, and prowls.
3. **The Partnership**  
Rather than Alaric simply "saving" her, the two decide to work together. Elara guides him through secret passages she discovered, while Alaric uses his strength to break barriers and defend them.
4. **The Clever Trick**  
Together, they devise a plan: Elara distracts the dragon with a shimmering mirror she found in the tower, while Alaric uses the moment to bind the dragon's wings with enchanted chains.
5. **The Escape**  
With the dragon subdued, they slip out of the tower. But instead of slaying the dragon, they show mercy, leaving it bound only until it promises to guard the kingdom rather than terrorize it.
6. **The Resolution**  
Back in the village, Alaric and Elara are celebrated not just for their bravery, but for their teamwork. They prove that true strength comes from courage, kindness, and working together.

**Moral**

The story teaches children that heroes aren't just strong—they're wise, compassionate, and willing to listen. And sometimes, the greatest victories come when two strong hearts join forces.

Would you like me to expand this into a **full bedtime story with gentle, lyrical narration** (something you could read aloud), or keep it as a **short outline** for you to adapt?

expand

Smart (GPT-5) ▾

# Full bedtime story

## The Prince, the Maiden, and the Dragon's Tower

Long ago, in a kingdom surrounded by silver rivers and golden fields, there stood a mountain so high its peak touched the clouds. At the very top of that mountain was a tower, guarded by a dragon whose scales gleamed like fire and whose eyes glowed like embers.

Inside the tower lived **Maiden Elara**. She was not afraid, for Elara was strong and clever. While the dragon thought her trapped, she spent her days watching, listening, and learning. She discovered the dragon's habits—when it slept, when it prowled, and when it grew restless.

Far below, in the valley, lived **Prince Alaric**. He was brave and kind, with a heart that sought justice. When he heard of Elara's plight, he vowed to help. But Alaric was wise; he did not rush blindly into danger. He listened to the villagers' tales, gathered supplies, and climbed the mountain with care.

When he reached the tower, Alaric expected to find a frightened maiden. Instead, he found Elara standing tall, her eyes bright with determination.

"You came to rescue me," she said with a smile, "but I have already learned the dragon's secrets. If we work together, we can both be free."

Alaric bowed his head. "Then let us be partners."

And so they planned. Elara showed him the hidden passages she had discovered, narrow stairways and winding halls that the dragon never entered. Alaric used his strength to break the locks and push aside heavy stones.

At last, they faced the dragon. It roared, shaking the tower walls, its wings spreading wide. But Elara was ready. She held up a shimmering mirror she had found, and the dragon, seeing its own fiery reflection, grew confused and angry. In that moment, Alaric leapt forward and bound its wings with enchanted chains.

The dragon thrashed and bellowed, but Alaric and Elara did not strike it down. Instead, Elara spoke gently:

"Great dragon, you are mighty, but you need not be cruel. Guard this kingdom, and you will be honored, not feared."

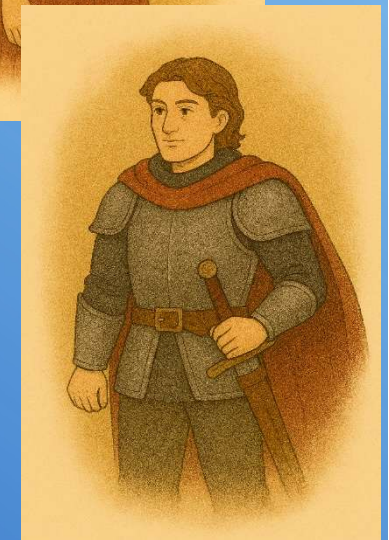
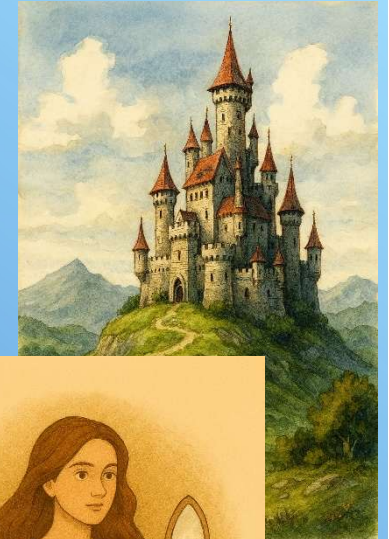
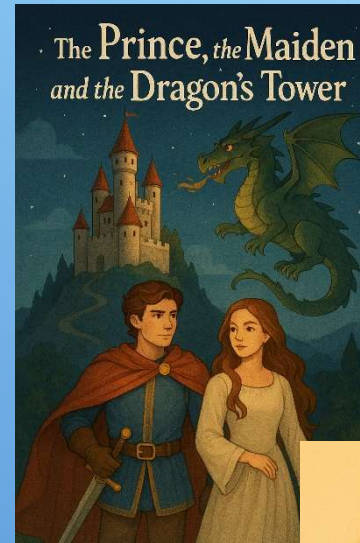
The dragon paused, its fiery eyes softening. At last, it lowered its head in agreement.

Together, Alaric and Elara walked free from the tower, the dragon watching over them from above. When they returned to the village, the people cheered—not just for their bravery, but for their kindness and teamwork.

From that day forward, the kingdom was safe, the dragon became its protector, and Alaric and Elara were remembered as heroes who proved that true strength lies not in fighting alone, but in joining hearts and hands.

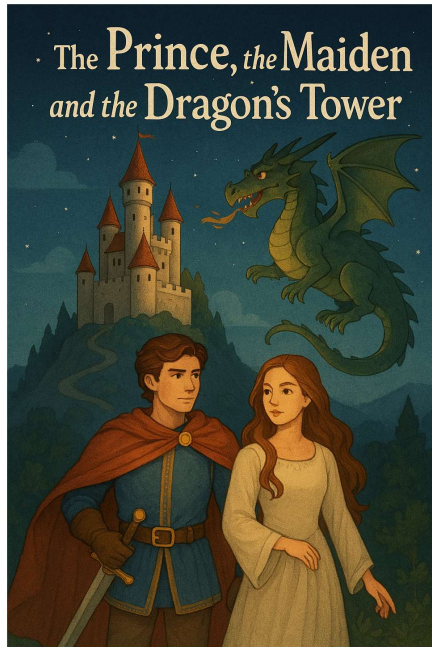
### 🌟 Moral of the Story

Courage is important, but kindness and teamwork make heroes truly shine.



## Create illustrations





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#### ☀ **Moral of the Story**

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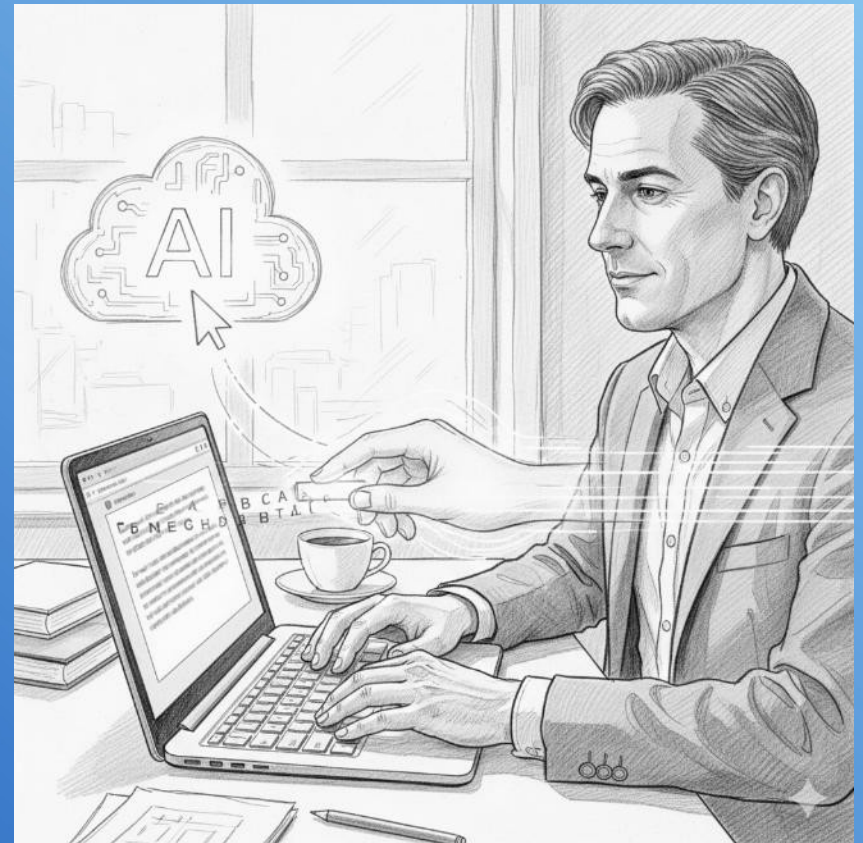
Put it all together  
in a document

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## Writing emails





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# grammarly help replying to emails

## Devastating news

Inbox x



7:47 PM (1 minute ago)



to me ▾

I just found out that Joe has terminal cancer and has 3 months to live.  
I am at my wits' end, can't stop crying.

Sandy

← Reply

→ Forward



Receive an email from a friend

- husband has cancer
- very upset & looking for support

Ignore!

Click *Reply*

- at a loss how to respond
- want to be supportive
- don't know the words to say



Reply quickly

Click *Reply quickly*

- maybe should be *Reply thoughtfully*



Sans Serif ▾



Send



Aa





## Analyses email

### Sender's intent

is expressing their distress over Joe's terminal cancer diagnosis and might be seeking comfort or support during this difficult time. sounds heartbroken.

### How do you want to reply?

Here are some ideas

**Express** sympathy and offer emotional support

**Suggest** a time to talk or meet up

**Ask** how they are coping with the news

### Express sympathy and offer emotional support

I can't imagine how devastating this news must be for you. Joe is such a wonderful person, and it's heartbreaking to think about what he's facing. Please know that I'm here for you during this incredibly difficult time. If you need someone to talk to or just sit with, I'm just a call away. You don't have to go through this alone.

Take care of yourself.

Insert

Retry ...



### Suggest a time to talk or meet up

I can't believe what you've shared about Joe. That's such devastating news. I can only imagine how overwhelming this must be for you.

How about we meet up on {Thursday} afternoon or {Saturday} morning? I think it would be helpful for us to talk about everything you're feeling. Let me know what works for you.

Insert

Retry



### Sound professional

I am deeply sorry to learn about Joe's diagnosis. This news must be profoundly distressing for you, and I can only imagine the emotional turmoil you are experiencing.

Please know that I am here to provide support during this challenging time. Should you wish to discuss this matter further or if there is any way I may assist you, do not hesitate to reach out. Your well-being is important, and I am committed to being there for you.

Take care of yourself.

Insert

Retry ...



## Other options

### Rewrite

- Shorten it
- Sound professional
- Make it more descriptive
- Make it more detailed
- Simplify it

### Adjust tone

- Sound confident
- Make it constructive
- Make it diplomatic
- Make it empathetic
- Make it friendly
- Make it inspirational
- Sound casual





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**Predictive AI**  
**searching for answers**

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# Answers from the Internet



- Not asking AI to generate new information
- Search the web for the best answer
- Perplexity.AI (generally) does a great job at this
  - finds multiple sources
  - combines and summarises conclusions
  - links to references sources so you can verify
- Others can also do a credible job
  - ChatGPT, Copilot, NotebookLM, Gemini, itthy, & others



I want to take an Icelandic cruise. What time of the year would be the best to see the northern lights and do you have any tips for photographing them?

#### Sources

Best Places to See Northern Lights | Royal Caribbean Cruises  
royalcaribbean · 1

Best camera settings to capture the Northern Lights - Adobe  
adobe · 2

Photographing The Northern Lights | Ambassador Cruise Line  
ambassadorcruiseline · 3

Hide sources

#### Answer

The best time to take an Icelandic cruise to see the Northern Lights is between late September and early April, with February and March being particularly favorable months <sup>1</sup> <sup>4</sup> <sup>7</sup>. During this period, Iceland experiences longer and darker nights, which are ideal conditions for viewing the Aurora Borealis <sup>1</sup>.

To maximize your chances of seeing the Northern Lights on your cruise:

1. Plan your trip during the winter months (December to February) for the darkest skies <sup>1</sup>.
2. Be prepared to stay up late, as the lights are most active between 9 PM and 2 AM, with peak activity around 11 PM to midnight <sup>3</sup>.

For photographing the Northern Lights:

1. Use a camera with manual settings, preferably a digital camera rather than a smartphone <sup>2</sup> <sup>3</sup>.
2. Set your camera to manual mode with the following settings <sup>2</sup> <sup>5</sup>:
  - Aperture: f/2.8 or the widest available
  - ISO: 3200 to 8000
  - Shutter speed: 1-12 seconds
  - White balance: 3500K
3. Use a tripod to keep the camera stable during long exposures <sup>3</sup>.
4. Focus manually on a distant light or set focus to infinity <sup>2</sup>.
5. Consider composition by including elements that can reflect the Aurora, such as water, snow, or ice <sup>5</sup>.
6. Be patient and flexible, as the Aurora's movement and intensity can change rapidly <sup>3</sup> <sup>5</sup>.

Remember to dress warmly and bring extra batteries, as cold temperatures can drain them quickly <sup>3</sup>. Additionally, check Aurora forecasts and cloud cover predictions to increase your chances of a successful sighting <sup>4</sup>.

#### Related

What are the best locations on an Icelandic cruise to spot the Northern Lights +

How can I maximize my chances of seeing the Northern Lights on a cruise +

Are there specific Northern Lights tours available in Iceland +

What should I pack for an Icelandic cruise to photograph the Northern Lights +

How does the weather in Iceland affect Northern Lights sightings +

Ask follow-up

Pro

#### 10 sources

1. Best Places to See Northern Lights | Royal Caribbean Cruises  
royalcaribbean · 1  
On the hunt to travel to the best place to see the northern lights? From Alaska to Iceland to Norway, here's where, when, and how to see the northern lights.

2. Best camera settings to capture the Northern Lights - Adobe  
adobe · 2  
Discover the best camera settings for Northern Lights photography. Learn how to set up your camera and edit your shots in Adobe Photoshop Lightroom.

3. The Ultimate Guide to Photographing the Aurora in Iceland  
iceland-photo-tours · 3  
There is nothing quite as enigmatic as the slow-dance of the Aurora Borealis (more commonly known as the 'Northern Lights'), quietly undulating across the night sky. Fo

4. Best Time to Take an Iceland Cruise - Adventure Life  
adventure-life · 4  
Discover the best times to visit Iceland, including the greatest times to see the Northern Lights, the midnight sun, whale watching, and the Blue Lagoon. Learn abo...

5. How to Photograph Northern Lights - Best Settings and Tips  
capturetheatlas · 5  
Best settings to photograph the Northern Lights: Aperture f/2.8, ISO 3200-8000, Shutter speed 1-12 seconds. Capture the Aurora like a PRO!

6. Photographing the Northern Lights in Iceland | Icelandair US  
icelandair · 6  
Capturing the aurora is a great achievement, but how do you get a winning shot? View our tips for photographing the northern lights with your camera or phone

7. Best time and place to see Northern Lights in Iceland  
fiftydegreesnorth · 7  
See the Northern Lights in Iceland in 2023 with 50 Degrees North. As locals, book a tour with the assurance of expert help.

Summary combined from multiple sources

Sources

Related information

Ask follow up

- retains context
- e.g.

*What is the best lens to use?*





Reviewed 10 sources >

Keyboards with better wear resistant keycaps, or special coatings. These tend to remain readable even after years of use on cheaper keyboards.

*The lettering on the keys of my desktop computer are wearing off. Are there keyboards that resist wear better than others?*



perplexity

#### Wear-Resistant Keycap Technologies

- **Double-Shot Keycaps:** Legends are molded as part of two layers of plastic, making them essentially impossible to wear off. PBT plastic (polybutylene terephthalate) is preferred over ABS (acrylonitrile butadiene styrene) because it's harder and resists shine, even after extended use. Double-shot PBT keycaps are considered the gold standard for mechanical keyboards where durability and permanent lettering are desired. [hexgears +2](#)
- **Dye-Sublimated Keycaps:** Commonly found on high-end and enthusiast mechanical keyboards, especially with PBT material. Dye is heat-infused into the plastic, producing legends that resist abrasion but may fade slightly over decades of constant use. These won't wear off like printed or laser-etched letters. [kineticlabs +1](#)
- **UV-Curable Coatings:** Some manufacturers use advanced UV-curable coatings, which create a tough, chemically resistant, and antimicrobial surface on keycaps, further preserving both the letter visibility and key surface integrity. [vueguard](#)

#### Recommended Keyboards (2025 Market)

- MSI FORGE GK600 TKL Wireless Keyboard – Well-reviewed for durability in 2025, suitable for most users, though you should confirm the keycap type for absolute certainty. [geekawhat](#)
- Premium keyboards like those from SteelSeries, Logitech, and certain enthusiast brands (such as those offering easily swappable PBT double-shot keycaps) are also good choices, especially in mechanical keyboard lines. [techgearlab +1](#)

#### Considerations for Purchase

- Confirm that a keyboard specifically lists "double-shot PBT" or "dye-sublimated PBT" in its specs, as not all "mechanical" keyboards include these by default.
- If you require backlighting, double-shot keycaps allow the light to shine through while preserving durability.
- Basic printed or laser-etched keycaps (common on budget models and many laptops) will wear fastest.

For optimal longevity, seek out a mechanical keyboard with double-shot PBT keycaps or dye-sublimated PBT keycaps, as these are considered the most wear-resistant by both industry and enthusiast standards. [linustechtips +2](#)

10 sources

#### Related

- ↳ Which keycap materials resist legend wear best
- ↳ Are double shot keycaps available for standard desktop keyboa
- ↳ How do PBT and ABS keycaps compare in durability
- ↳ Can I replace worn keycaps instead of buying a new keyboard
- ↳ What keyboards have backlit durable legends for heavy use

*Logical follow-up questions*

Sources - 3

- Mastering Mechanical Keyboard Key... Hexgears
- Need keyboard with let... Tom's Hardware Forum
- keyboard lettering that lasts ... Linus Tech Tips

*What are double-shot keycaps?*


Year-End Sale: 10% Off 🛒 🛒 🛒

USD (\$)

HEXGEARS HYEKU

# Mastering Mechanical Keyboard Keycap Types: A Complete Guide

Sep 24, 2024 0 comments



## What is the difference between a dye-sub and a double-shot keycap?

The good old mechanical keyboard keycap question. Unbeknown to most, but as vital as mechanical switches when it comes to selecting keycaps for your mechanical gaming keyboard . In this blog, we will be looking into what double-shot keycaps are, as well as breaking down the differences between Dye-Sublimation and Double-shot Keycaps.





When you want to dig deeper

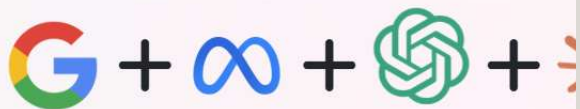
The lettering on the keys of my desktop computer are wearing off.  
Are there keyboards that resist wear better than others?



⚡ Fast Research

🌐 Deep Research

What happens when  
**combine every AI**



It's finally time for something better than ChatGPT

ithy uses multiple AI services  
to get your answers

Deep Research

## Unlock Everlasting Keystrokes: The Secret to Unfading Keyboard Legends

Discover how advanced keycap technology and construction methods can banish worn-off lettering from your desktop keyboard forever.



40+ Sources

1. Key Insights for Durable Keyboards
2. The Science of Unyielding Keycap Legends
3. Recommended Keyboards and Keycap Sets for Enduring Performance
4. Comparative Analysis of Keycap Durability Features
5. Understanding Keycap Manufacturing: A Mindmap
6. Exploring the Visual Difference: Double-Shot Keycaps
7. A Comparison of Keyboard Durability Aspects
8. Summary of Keycap Types and Their Durability
9. Conclusion: Investing in Lasting Legibility
10. Frequently Asked Questions
11. Recommended Further Reading
12. Referenced Search Results

## The Science of Unyielding Keycap Legends

The durability of keycap legends is not a matter of chance but a result of deliberate engineering and material science. Different manufacturing processes dictate how well a keycap's inscription will endure countless keystrokes. Here's a breakdown of the most effective methods:

### Polybutylene Terephthalate (PBT) Keycaps: The Foundation of Durability

PBT plastic is widely recognized as the gold standard for durable keycaps. Its inherent properties make it significantly more resistant to wear than the more common ABS plastic. PBT keycaps maintain their matte texture over time, preventing the oily, shiny appearance that often plagues ABS keycaps with prolonged use. This material is less prone to "finger oils" causing shine, which means your key legends are less likely to blur or fade as the surface degrades.

#### Why PBT Excels:

- **Resistance to Shine:** Unlike ABS, PBT doesn't easily develop a greasy sheen, preserving its original look and feel.
- **Chemical Resistance:** PBT is more resistant to common chemicals found in skin oils and cleaning agents.

### Double-Shot Injection Molding: The Unbeatable Standard

Double-shot keycaps are produced by molding two separate layers. The first layer forms the legend, and the second layer is molded around it to form the body of the keycap. This means the lettering is literally a part of the keycap, made from a different color of plastic embedded within, rather than just printed on top. Consequently, double-shot legends are virtually impossible to wear off, making them the pinnacle of durability for keycap legends.

Three of 12 sections



## Recommended Keyboards and Keycap Sets for Enduring Performance

When selecting a keyboard or keycap set designed for longevity, focusing on brands and models known for their commitment to durable materials and manufacturing processes is essential. Here's a curated list of recommendations:

### Top Keyboard Brands and Models:

Several manufacturers consistently deliver keyboards with superior wear resistance. These often feature PBT keycaps, double-shot molding, or a combination thereof, along with robust build quality.

- **Keychron V Series (e.g., V3 Max, V5 Max, V6 Max):** Known for wireless mechanical keyboards equipped with durable PBT keycaps, often with double-shot options. They are praised for resisting shine and fading.
- **Das Keyboard Models:** Often feature gold-plated mechanical switches and double-shot PBT keycaps, specifically designed for professional use and heavy daily typing.
- **Corsair K95 RGB Platinum XT:** This model, along with others like the K68, is recognized for its aircraft-grade aluminum frame and durable double-shot legends.
- **Logitech G413 TKL SE & G513:** These models incorporate PBT keycaps for enhanced durability in gaming and general use. The G513, in particular, uses double-shot PBT.
- **Ducky Keyboards (e.g., One 2 Mini, One 3 TKL):** Ducky is highly regarded for its solid build quality and inclusion of PBT keycaps.
- **SteelSeries Keyboards:** Many models from SteelSeries utilize double-shot PBT keycaps, engineered to provide a premium feel and resist fading.
- **NuPhy Field75HE:** A compact wireless gaming keyboard featuring Hall effect switches and thick PBT keycaps, celebrated for its durability under intensive use.



## Recommended Further Reading

Discover the best PBT keycap sets to upgrade your mechanical keyboard. →






Explore a detailed comparison of double-shot and dye-sublimation for ultimate keycap durability. →

Find out which mechanical keyboards are rated highest durability and longevity in 2025.

Learn best practices for cleaning and maintaining your keyboard to extend their lifespan.



## Referenced Search Results

-  hexgears.com  
Mastering Mechanical Keyboard Keycap Types: A Complete Guide - Hexgears
-  gloriousgaming.com  
What are doubleshot keycaps? Are they really worth it? - Glorious
-  nytimes.com  
The 6 Best Mechanical Keyboards of 2025 | Reviews by Wirecutter
-  keyceo.com  
What Are the Most Durable Mechanical Keyboards for Work? - Keyceo
-  amazon.com  
HK Dye Sublimation Keycaps (fade-resistant PBT, dye-sub)

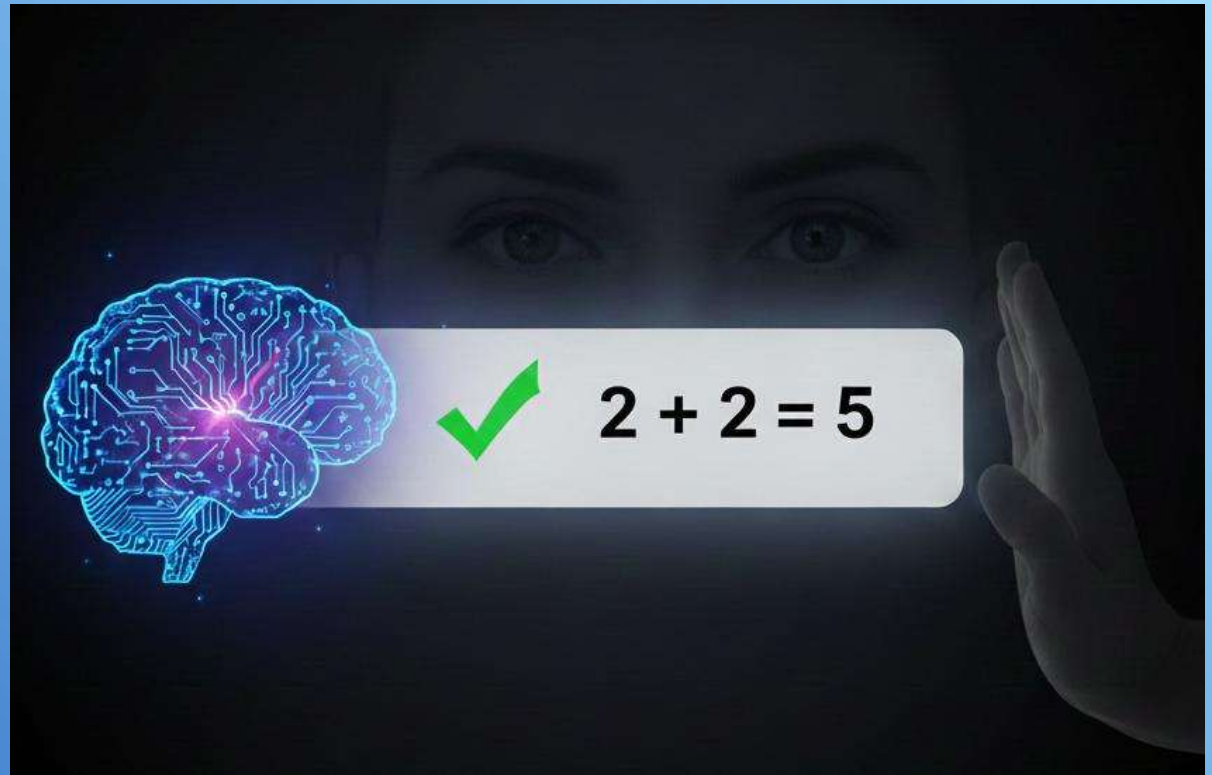
41 references

CERAMIC KEYCAP SET V2 (extreme durability option)

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for over 40 years



**Don't blindly agree**  
**AI can give confident, wrong answers!**



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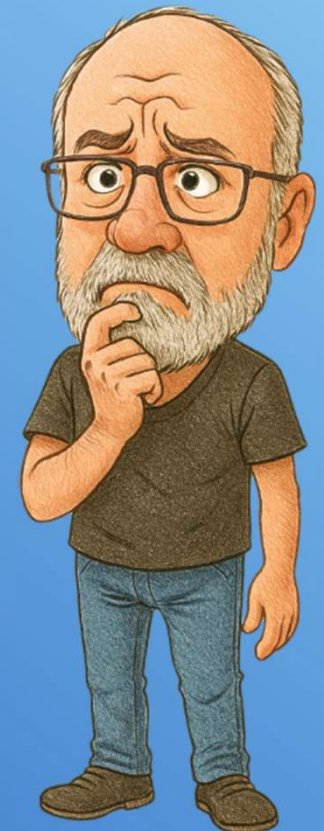
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# Time zones

- Request to give a presentation over Zoom to Arizona group
  - April 22<sup>nd</sup>, 2025
  - 12:30 PM their time
    - they indicated Arizona stays on Mountain Standard Time year-round

Ask AI what time do I present from here in Ottawa?

- *On April 22nd, 2025, when it is 12:30 PM Mountain Standard Time, what time will it be in Ottawa, Canada?*



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perplexity



- **April 22nd, 2025, 12:30 Mountain Standard Time (MST)** will be **14:30 (2:30 PM) in Ottawa, Canada Wrong**
  - Ottawa is 2 hours ahead of MST **...if Ottawa on Standard Time**
  - **Ottawa will be observing Eastern Daylight Time (EDT)**, as Daylight Saving Time starts on March 9, 2025 **Correct**
  - Time Zone Information
    - Ottawa, Canada: Eastern Daylight Time (EDT), UTC-4 **Correct**
    - Mountain Standard Time (MST): UTC-7 **Correct**
  - The time difference between Ottawa and MST **remains constant at 2 hours throughout the year, even when Ottawa switches to Daylight Saving Time. NONSENSE!**

 ChatGPT Got it wrong too!



# Rephrased



On April 22, 2025 at 12:30 PM in Arizona, what time will it be in Ottawa, Canada

Answer Sources · 10 Tasks

At 12:30 PM on April 22, 2025, in Arizona, it will be 3:30 PM in Ottawa, Canada.

This is because:

- Most of Arizona remains on Mountain Standard Time (MST, UTC-7) year-round and does not observe daylight saving time <sup>2</sup> <sup>5</sup>.
- Ottawa, Canada, will be on Eastern Daylight Time (EDT, UTC-4) on April 22, 2025, since daylight saving time begins there in March <sup>3</sup>.
- Ottawa is 3 hours ahead of Arizona during this period <sup>6</sup>.

So, when it is 12:30 PM in Arizona, it is 3:30 PM in Ottawa.

Share Refresh Embed Like Dislike Copy ...

## Related

- What time will it be in Ottawa when it's 12:30 PM in Arizona on April 22, 2025 +
- How does daylight saving time affect the time difference between Arizona and Ottawa in April 2025 +
- Why is there a 3-hour difference between Arizona and Ottawa on that date +
- Will the time difference change if I check later in the day in Arizona on April 22, 2025 +
- How accurate are online tools for converting times between Arizona and Ottawa during daylight saving periods +

Correct

Clear explanation that makes sense

Lesson:

- pay attention to explanations
- do they make sense?
- check references as appropriate



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**When you don't know how to do something...**  
**ask AI!**



# Normalize phone numbers in Excel

	A	B	C	D	E
1	FirstName	LastName	Street	City	Phone
2	Emma	Thompson	123 Maple Ave	Ottawa	613-123-4567
3	Liam	Garcia	456 Oak St	Ottawa	987-6543
4	Olivia	Chen	789 Pine Rd	Nepean	613-234-5678
5	Noah	Patel	321 Elm Ln	Orleans	
6	Ethan	Kim	987 Cedar Blvd	Toronto	416-765-4321
7	Scott	May		Ottawa	613-456-7890
8	Max	Lee		Vancouver	672-654-3210
9	Isabella	Brown	852 Aspen Ct	Nepean	
10	Mia	Wilson	357 Sycamore Ave	Ottawa	678-9012
11	James	Anderson	159 Chestnut St	Gatineau	819-432-1098
12	Charlotte	Thomas	753 Magnolia Ln	Ottawa	789-0123
13	Benjamin	Jackson	951 Poplar Dr	Nepean	321-0987
14	Amelia	White	246 Dogwood Rd	Ottawa	
15	Harper	Martin	579 Beech St	Nepean	613-901-2345

All mock data

Not all phone numbers have area codes

- thousands of records
- don't want to manually correct

## What I need

- any phone number with an area code
  - leave as-is
- any phone number without an area code
  - add **613-** to the start
- any with no phone number
  - leave blank

# First attempt



	A	B	C	D	E
1	FirstName	LastName	Street	City	Phone
2	Emma	Thompson	123 Maple Ave	Ottawa	613-123-4567
3	Liam	Garcia	456 Oak St	Ottawa	987-6543
4	Olivia	Chen	789 Pine Rd	Nepean	613-234-5678
5	Noah	Patel	321 Elm Ln	Orleans	
6	Ethan	Kim	987 Cedar Blvd	Toronto	416-765-4321
7	Scott	May		Ottawa	613-456-7890
8	Madison	Lee		Vancouver	672-654-3210
9	Isabella	Brown	852 Aspen Ct	Nepean	
10	Mia	Wilson	357 Sycamore Ave	Ottawa	678-9012
11	James	Anderson	159 Chestnut St	Gatineau	819-432-1098
12	Charlotte	Thomas	753 Magnolia Ln	Ottawa	789-0123
13	Benjamin	Jackson	951 Poplar Dr	Nepean	321-0987
14	Amelia	White	246 Dogwood Rd	Ottawa	
15	Harper	Martin	579 Beech St	Nepean	613-901-2345

All mock data

*In Excel, if cell E2 has content that is 3 numbers, followed by "-" followed by 4 numbers, reformat to be "613-" followed by the current contents of cell E2*

## Perplexity.AI's answer

- To reformat the content of cell E2 in Excel so that it begins with "613-" followed by its current contents, you can use the following formula:
- **=CONCATENATE("613-", E2)**
- Explanation:
- **CONCATENATE Function:** This function is used to join multiple strings into one. In this case, it combines the string "613-" with the existing content of cell E2.
- **"613-":** This is the static string that you want to prepend to the content of E2.
- **E2:** This refers to the cell whose content you want to append after "613-".



=CONCATENATE("613-", E2)

Wrong

- =CONCATENATE("613-", E2)
- Just adds 613- to start

replicate F2 down

	A	B	C	D	E	F
1	FirstName	LastName	Street	City	Phone	
2	Emma	Thompson	123 Maple Ave	Ottawa	613-123-4567	613-613-123-4567
3	Liam	Garcia	456 Oak St	Ottawa	987-6543	613-987-6543
4	Olivia	Chen	789 Pine Rd	Nepean	613-234-5678	613-613-234-5678
5	Noah	Patel	321 Elm Ln	Orleans		613-
6	Ethan	Kim	987 Cedar Blvd	Toronto	416-765-4321	613-416-765-4321
7	Sophia	Martinez	159 Willow Way	Ottawa	613-456-7890	613-613-456-7890
8	Mason	Taylor	753 Spruce St	Vancouver	672-654-3210	613-672-654-3210
9	Isabella	Brown	852 Aspen Ct	Nepean		613-
10	Mia	Wilson	357 Sycamore Ave	Ottawa	678-9012	613-678-9012
11	James	Anderson	159 Chestnut St	Gatineau	819-432-1098	613-819-432-1098
12	Charlotte	Thomas	753 Magnolia Ln	Ottawa	789-0123	613-789-0123
13	Benjamin	Jackson	951 Poplar Dr	Nepean	321-0987	613-321-0987
14	Amelia	White	246 Dogwood Rd	Ottawa		613-
15	Harper	Martin	579 Beech St	Nepean	613-901-2345	613-613-901-2345

Follow up

- *Only do the concatenation if the current contents of E2 are 3 numbers followed by "-" followed by 4 numbers*

Second formula

- =IF(AND(LEN(E2)=8, ISNUMBER(--LEFT(E2,3)), ISNUMBER(--RIGHT(E2,4)), MID(E2,4,1)="-"), "613-" & E2, E2)

Worked except it put "0" in cells with no phone number

## Follow up

- *If cell E2 is currently blank, leave it blank*

## Third formula

- `=IF(E2="", "", IF(AND(LEN(E2)=8, ISNUMBER(--LEFT(E2,3)), ISNUMBER(--RIGHT(E2,4)), MID(E2,4,1)="-"), "613-" & E2, E2))`

	A	B	C	D	E	F
1	FirstName	LastName	Street	City	Phone	
2	Emma	Thompson	123 Maple Ave	Ottawa	613-123-4567	613-123-4567
3	Liam	Garcia	456 Oak St	Ottawa	987-6543	613-987-6543
4	Olivia	Chen	789 Pine Rd	Nepean	613-234-5678	613-234-5678
5	Noah	Patel	321 Elm Ln	Orleans		
6	Ethan	Kim	987 Cedar Blvd	Toronto	416-765-4321	416-765-4321
7	Sophia	Martinez	159 Willow Way	Ottawa	613-456-7890	613-456-7890
8	Mason	Taylor	753 Spruce St	Vancouver	672-654-3210	672-654-3210
9	Isabella	Brown	852 Aspen Ct	Nepean		
10	Mia	Wilson	357 Sycamore Ave	Ottawa	678-9012	613-678-9012
11	James	Anderson	159 Chestnut St	Gatineau	819-432-1098	819-432-1098
12	Charlotte	Thomas	753 Magnolia Ln	Ottawa	789-0123	613-789-0123
13	Benjamin	Jackson	951 Poplar Dr	Nepean	321-0987	613-321-0987
14	Amelia	White	246 Dogwood Rd	Ottawa		
15	Harper	Martin	579 Beech St	Nepean	613-901-2345	613-901-2345

## Perfect

- phone numbers without area codes had **613-** added
- phone numbers with area codes left as-is
- empty cells left blank

## Result

- exactly what I wanted
- accomplished in under **5 minutes**
- would've taken me **hours** on my own!
- **was easy to verify results**



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## **Instructions & help using common software**

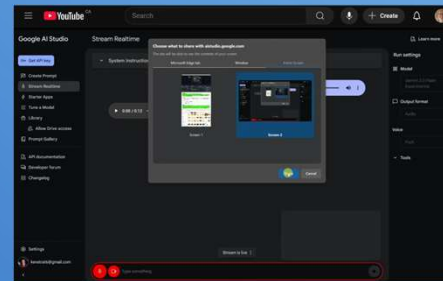
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# Kevin Stratvert—Google AI Studio

- Google AI Studio
  - *This Free AI Changes How You Learn Software Forever*
- It can watch your screen & provide help with using software
- You can
  - ask questions
  - get instant answers
  - learn by doing



<https://www.youtube.com/watch?v=3cvczHJSRNs>

AI Andy (additional examples)

[https://www.youtube.com/watch?v=e6c\\_uwQwV9A](https://www.youtube.com/watch?v=e6c_uwQwV9A)





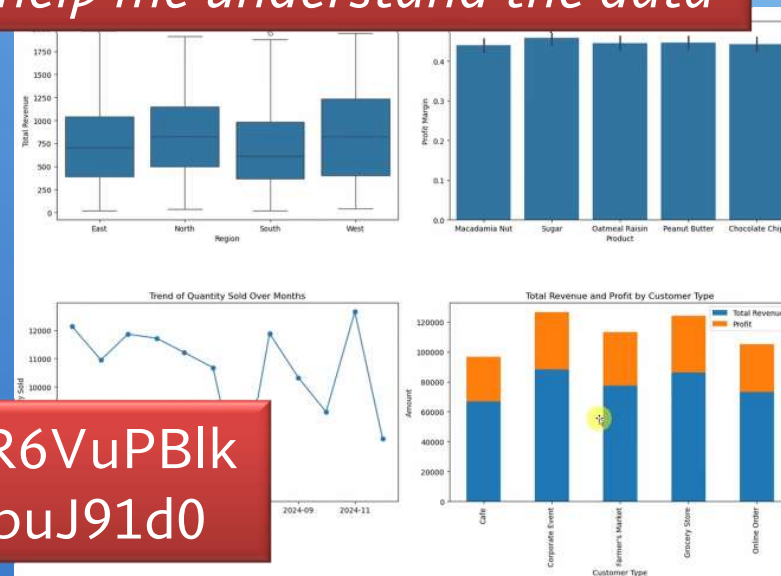
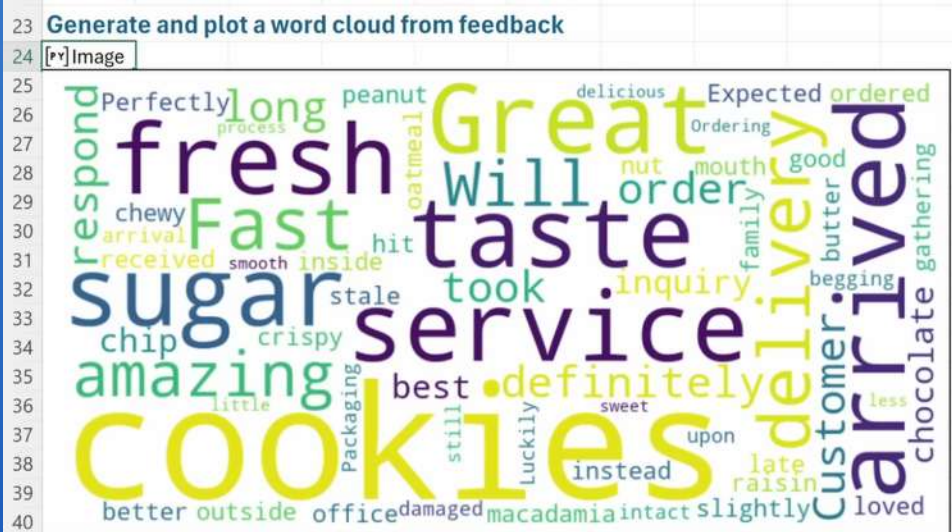
**\* requires subscription to Microsoft 365**

*Clean Customer Type column. Remove extra spaces. Make capitalization consistent.*

*Make a line chart showing total revenue by month*

## Summarise feedback & generate a word cloud using Python

*Build a dashboard with charts to help me understand the data*



<https://www.youtube.com/watch?v=KXqR6VuPBIk>

<https://www.youtube.com/watch?v=ul8ApuJ91d0>

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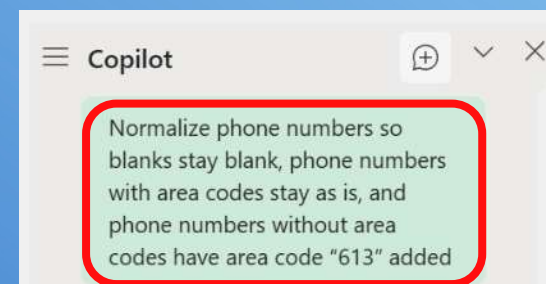
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# Copilot in Excel 365

	A	B	C	D	E
1	FirstName	LastName	Street	City	Phone
2	Emma	Thompson	123 Maple Ave	Ottawa	613-123-4567
3	Liam	Garcia	456 Oak St	Ottawa	987-6543
4	Olivia	Chen	789 Pine Rd	Nepean	613-234-5678
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8	Mason	Taylor	753 Spruce St	Vancouver	672-654-3210
9	Isabella	Brown	852 Aspen Ct	Nepean	
10	Mia	Wilson	357 Sycamore Ave	Ottawa	678-9012
11	James	Anderson	159 Chestnut St	Gatineau	819-432-1098
12	Charlotte	Thomas	753 Magnolia Ln	Ottawa	789-0123
13	Benjamin	Jackson	951 Poplar Dr	Nepean	321-0987
14	Amelia	White	246 Dogwood Rd	Ottawa	
15	Harper	Martin	579 Beech St	Nepean	613-901-2345



- clicked Copilot icon



- plain language requirement statement
- assumed it would understand phone numbers

Microsoft 365 Copilot available to *subscribers* of Microsoft 365

- **not** available to perpetual licenses of Office



**Copilot**

Normalize phone numbers so blanks stay blank, phone numbers with area codes stay as is, and phone numbers without area codes have area code "613" added

**Copilot** AI-generated content may be incorrect

Looking at A1:E15 on 'Original (2)', here's 1 formula column to review and insert in Column F:

**Normalized Phone**  
Standardizes phone numbers by adding the 613 (area code for Ottawa, no units) prefix to any phone number that is eight digits long, while leaving other numbers unchanged and keeping empty entries blank. This helps ensure consistency in contact information across the table.

fx

=IF(\$E2="", "", IF(LEN(\$E2)=8, "613-" & \$E2, \$E2))

Show explanation

	Normalized Phone
1	
2	613-123-4567
3	613-987-6543
4	613-234-5678
5	
...	...

+ Insert column

Give me another suggestion based on my prompt

+ Message Copilot

Found phone number column in entire sheet

Explanation: what Copilot will do

Formula to transform data

Standardizes the phone numbers for each entry in the table using the following logic:

- Uses the IF function to check if the "Phone" value is empty; if it is, returns an empty string.
- If the "Phone" value is not empty, uses the LEN function to check if the length of the "Phone" value is 8 (eight digits).
- If the length is 8 (eight digits), adds the prefix "613-" (the area code for Ottawa) to the "Phone" value.
- If the length is not 8 (eight digits), returns the original "Phone" value unchanged.

Sample output

click to create new column with transformed data

	A	B	C	D	E
1	FirstName	LastName	Street	City	Phone
2	Emma	Thompson	123 Maple Ave	Ottawa	613-123-4567
3	Liam	Garcia	456 Oak St	Ottawa	987-6543
4	Olivia	Chen	789 Pine Rd	Nepean	613-234-5678
5	Noah	Patel	321 Elm Ln	Orleans	
6	Ethan	Kim	987 Cedar Blvd	Toronto	416-765-4321
7	Sophia	Martinez	159 Willow Way	Ottawa	613-456-7890
8	Mason	Taylor	753 Spruce St	Vancouver	672-654-3210
9	Isabella	Brown	852 Aspen Ct	Nepean	
10	Mia	Wilson	357 Sycamore Ave	Ottawa	678-9012
11	James	Anderson	159 Chestnut St	Gatineau	819-432-1098
12	Charlotte	Thomas	753 Magnolia Ln	Ottawa	789-0123
13	Benjamin	Jackson	951 Poplar Dr	Nepean	321-0987
14	Amelia	White	246 Dogwood Rd	Ottawa	
15	Harper	Martin	579 Beech St	Nepean	613-901-2345



Original data

	A	B	C	D	E	F
1	FirstName	LastName	Street	City	Phone	Normalized Phone
2	Emma	Thompson	123 Maple Ave	Ottawa	613-123-4567	613-123-4567
3	Liam	Garcia	456 Oak St	Ottawa	987-6543	613-987-6543
4	Olivia	Chen	789 Pine Rd	Nepean	613-234-5678	613-234-5678
5	Noah	Patel	321 Elm Ln	Orleans		
6	Ethan	Kim	987 Cedar Blvd	Toronto	416-765-4321	416-765-4321
7	Sophia	Martinez	159 Willow Way	Ottawa	613-456-7890	613-456-7890
8	Mason	Taylor	753 Spruce St	Vancouver	672-654-3210	672-654-3210
9	Isabella	Brown	852 Aspen Ct	Nepean		
10	Mia	Wilson	357 Sycamore Ave	Ottawa	678-9012	613-678-9012
11	James	Anderson	159 Chestnut St	Gatineau	819-432-1098	819-432-1098
12	Charlotte	Thomas	753 Magnolia Ln	Ottawa	789-0123	613-789-0123
13	Benjamin	Jackson	951 Poplar Dr	Nepean	321-0987	613-321-0987
14	Amelia	White	246 Dogwood Rd	Ottawa		
15	Harper	Martin	579 Beech St	Nepean	613-901-2345	613-901-2345

Perfect results on first try

And it did the work for me!



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# Why is Microsoft Copilot so good?

- Data in Microsoft Excel
  - Microsoft should know Excel better than anyone
- Copilot can see all the data
  - in fact, file *must* be *autosaved* to OneDrive
  - Copilot's AI processing done in Microsoft's Azure cloud
    - document must be accessible in cloud
    - architected that way for efficiency
  - user must decide if this is a privacy concern

Copilot not the only game in town

Anthropic's Claude: *Claude for Excel*

- research preview announced 2025-10-27
- explain spreadsheets, fix formulas, financial services tools, build new workbooks, connect to PowerPoint, email, & Teams, etc.

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for over 40 years

## **Summarising video**



# Summarising video



Good summary

- comprehensive
- 694 words



This video from Veritasium explores the surprising phenomenon of **synchronization**, a form of spontaneous order that occurs throughout the universe despite nature's tendency toward disorder, as described by the second law of thermodynamics [00:00].

## The Mystery of Order

- **The Millennium Bridge Incident:** The video opens with the example of the Millennium Bridge in London, which began to wobble when crowds crossed it on opening day in 2000, leading to its closure for two years [00:35]. While it's known that armies must break step when crossing bridges, random members of the public spontaneously walked in sync on the Millennium Bridge [01:41].
- **Huygens' Clocks:** The earliest observation of spontaneous synchronization in inanimate objects was made by Dutch physicist Christiaan Huygens in 1665. While testing two of his new pendulum clocks hung from the same wooden beam, he discovered that they would spontaneously synchronize, swinging in opposition (anti-phase) [02:59]. He realized the synchronization was caused by mechanical vibrations transferred through the shared wood beam, making the clocks "coupled oscillators" [04:01].

## The Science of Coupling

- **Metronome Demonstration:** A demonstration shows that multiple metronomes placed on a light, wobbly platform will spontaneously begin to beat in time, even if they have slightly different natural frequencies [04:30]. The wobbly platform acts as the **coupling mechanism**, giving an out-of-sync metronome a tiny kick every half-swing until it falls in time with the others [05:32].
- **The Kuramoto Model:** This mathematical model describes synchronization by representing an oscillator's position (or phase) as a point on a circle [06:05]. The rate at which the point moves around the circle is determined by its natural frequency plus an amount related to how far it is from the other points, a term defined by the **coupling strength** [07:01]. If the coupling is strong enough, it can overcome inherent differences in frequency, forcing the oscillators to lock phase in time.
- **Phase Transition:** Synchronization is a form of **phase transition**, similar to water suddenly freezing at a critical temperature. As coupling strength increases, a system doesn't gradually synchronize, but instead, its oscillators suddenly lock their phases in time once the critical level of coupling is passed [09:08]. This is even observable when an audience spontaneously transitions from random clapping to synchronized applause [09:37].

## Synchronization Across Scales

The phenomenon is universal and occurs at every scale of nature, utilizing various communication channels (gravitational, chemical, electrical, mechanical) [10:02].

- **Cosmic Synchronization:** Earth's Moon is **tidally locked**, meaning we only ever see one side of it because its rotation on its axis exactly matches the time it takes to orbit [10:33]. This is a common effect where the planet's gravitational pull slows the moon's rotation until it locks into resonance [10:52].
- **Biological Synchronization:**
  - **Fireflies** in Southeast Asia are famous for synchronizing their flashes, with hundreds of thousands flashing together in the same split second [07:58].
  - **Chemical Waves:** The Belousov-Zhabotinsky (BZ) reaction is an oscillating chemical reaction that changes color periodically [12:34]. When unstirred, it creates spiral waves of chemical concentration [13:29]. These waves are mirrored in **cardiac arrhythmias**, where spiral waves of electrical excitation in the heart can cause ventricular fibrillation (a lack of synchronization that prevents blood from being pumped) [14:05].

## The Millennium Bridge Solution

- **The Real Cause of the Wobble:** Engineers initially missed a critical factor: the Millennium Bridge had a resonant **sideways frequency** of one cycle per second [16:07]. While sideways force from an individual's step is normally negligible, when the bridge moved slightly, people subconsciously changed their gait—spreading their legs and walking with the bridge's motion to stabilize themselves [17:32].
- **Positive Feedback Loop:** It was not people walking in sync that caused the wobble, but the **wobbling bridge that caused people to walk in sync** [17:57]. This created a positive feedback loop: the crowd's synchronized steps drove more energy into the bridge, making the motion worse, which caused more people to synchronize. The problem was solved by installing energy-dissipating dampers to decrease the coupling strength of the system [18:26].

Ultimately, synchronization is a critical component of understanding **complex systems**, representing the scientific frontier where the properties of the whole are greater than the parts [18:49].

Make summary more concise

- 252-word summary
- still good

This video explores the concept of **synchronization**, the spontaneous emergence of order in complex systems (like fireflies flashing or the human heart beating) despite the universe's general tendency toward disorder.

- **The Discovery:** The phenomenon was first documented in 1665 by Christiaan Huygens, who noticed two of his pendulum clocks, hung from the same wooden beam, spontaneously began to swing in time. He realized the synchronization was due to **coupling**—the transfer of mechanical energy (vibrations) through the shared beam.
- **The Mechanism:** Synchronization is demonstrated by metronomes on a wobbly platform, where the platform itself acts as the coupling mechanism to nudge out-of-sync oscillators until they lock together. The underlying mathematics is captured by the **Kuramoto Model**, which shows that synchronization is a **phase transition** that occurs when the coupling strength between oscillators overcomes their individual frequency differences.
- **Universal Examples:** The phenomenon is found at every scale:
  - **Cosmic:** Moons, like Earth's, becoming **tidally locked** to their planet.
  - **Biological/Medical:** Fireflies flashing in unison, and **spiral waves** in oscillating chemical reactions that mimic patterns found in life-threatening **cardiac arrhythmias**.
- **The Millennium Bridge Paradox:** The bridge's wobble was caused by its low **sideways resonant frequency**. A slight sway forced pedestrians to instinctively adopt a synchronized, side-to-side gait for stability, which created a **positive feedback loop** that amplified the wobble. The problem was solved by installing energy-dissipating dampers to reduce the coupling strength between the bridge and the crowd.

The video concludes that understanding synchronization is a key frontier in the study of **complex systems** across science.

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for over 40 years

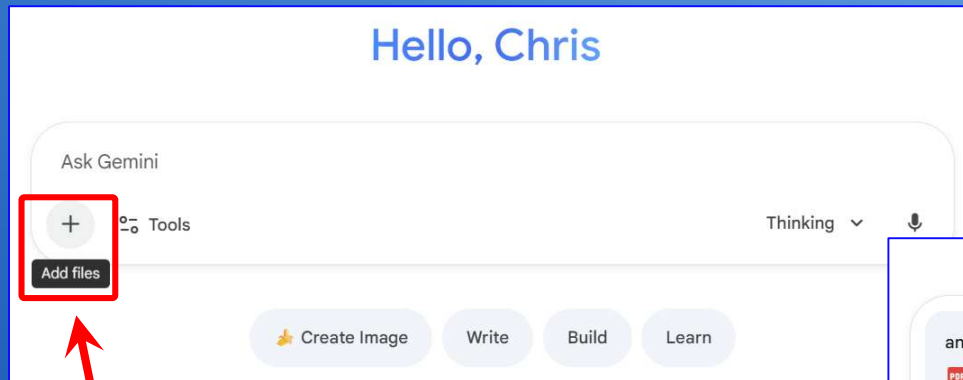
## **Summarising text**



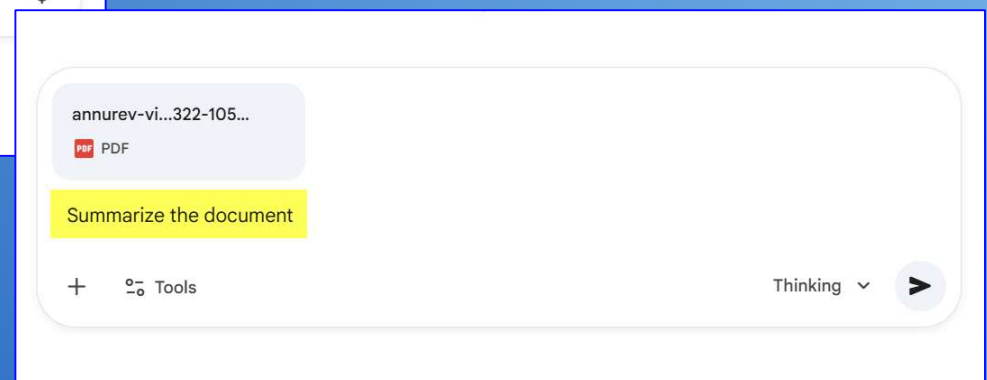
# Summarising a PDF document

## *Annual Review of Vision Science* *Digital Image Sensor Evolution and New Frontiers*

- PDF file
  - 28-pages
  - 15,000 words



Add PDF file



Here is a comprehensive summary of the document "Digital Image Sensor Evolution and New Frontiers," detailing the history, technical evolution, and future of image sensor technology.

## 1. Introduction and Historical Context

Image sensors are the core of digital cameras. Tubes (CRT) in the early days were large, heavy, and expensive. Modern sensors are smaller, lighter, and more efficient.

- **Social Impact:** The rise of social media has driven demand for high-quality mobile imaging.
- **Early Solid-State:** Early solid-state sensors addressed the size and power requirements for miniaturized interplanetary probes.

## 2. The Era of Charge-Coupled Devices (CCDs)

Invented at Bell Labs in the 1960s, CCDs dominated the market for decades due to low fixed-pattern noise and high resolution.

- **Mechanism:** CCDs use a series of MOS gate electrodes to move charge packets across the chip.
- **Architectures:**
  - **Frame-Transfer:** Requires a large area for the storage of the next frame.
  - **Interline-Transfer:** Acts like a global shutter but has lower fill factor.
- **Key Innovations:**
  - **Pinned Photodiode:** Reduces kTC noise by pinning the Fermi level within the depletion region.
  - **Microlenses:** Improve light collection efficiency.
  - **Color Filters:** Enable color imaging by filtering light before it reaches the sensor.

**CCD Limitations:** Despite their quality, CCDs suffered from high power consumption, difficulties in integrating peripheral electronics (like logic or ADCs) on the same chip, and yield issues due to the requirement for nearly perfect charge-transfer efficiency.

## 3. The CMOS Image Sensor Revolution (1990s)

The Complementary Metal-Oxide-Semiconductor (CMOS) technology addressed the size and power requirements for miniaturized interplanetary probes.

- **Active Pixel Sensor:** Each pixel has its own amplifier, allowing for charge transfer and readout.
- **The 4-T Pixel:** Uses Select (SEL), Reset (RST), and Photodiode (PPD) gates.
- **On-Chip Integration:** Allows for integration of logic, ADCs, and other peripherals on the same chip, significantly reducing size and power.

## 4. 21st Century Manufacturing

The smartphone market has driven massive volume manufacturing (5-7 billion units annually).

- **Backside Illumination:** Moves the wafer, thinning the substrate, increasing light absorption.
- **Deep Trench Isolation:** Blocks electron diffusion between pixels.
- **3D Stacking:** Uses through-silicon vias (TSVs) and bonding to stack multiple sensor layers, enabling advanced architectures.

## 5. Specialized Applications

Beyond smartphones, image sensors have evolved for specific industrial and scientific needs:

- **Automotive:** Requires High Dynamic Range (HDR) (minimum 120 dB) and mitigation of LED flicker from traffic signals.
- **Medical:** "Pill cameras" for capsule endoscopy require extreme miniaturization and low power to transmit images from inside the digestive tract.
- **Dynamic Vision Sensors (DVS):** Instead of standard frames, these sensors record only changes in contrast (events) asynchronously, reducing data volume for high-speed machine vision.
- **Indirect Time of Flight (iToF):** Measures distance by calculating the ratio of light detected during the ON and OFF phases of a modulated light pulse.

## 6. Quanta Image Sensors (QIS)

QIS represents a paradigm shift where sensors detect and count single photons.

- **SPAD-based QIS:** Uses Single-Photon Avalanche Detectors which rely on high electric fields and avalanche multiplication. They offer excellent timing but require larger pixels and higher power.
- **CMOS QIS:** Uses standard CMOS technology with extremely low sense-node capacitance to achieve high conversion gain ( $300-500 \mu V/e^-$ ). This allows single-electron detection without avalanche gain, enabling smaller pixels and lower power.

## 7. Future Frontiers

- **Edge Computing:** 3D stacking facilitates massively parallel local image processing directly on the sensor.
- **Security:** New methods are being explored to authenticate images at the point of capture to prevent deepfakes.

...ward "perfect color routers" to replace Bayer filters, which can reduce camera size.

...technical difference between the "Global Shutter" and "Rolling Shutter" is common in many CMOS sensors, or elaborate on how the Pinned Photodiode physically reduces noise?

Click a link

- highlights source in PDF
- read in context

the technology of the CIS business, several specific applications require a dedicated design, layout, or fabrication technology for the devices that is different from the one applied for mobile imaging sensors. A few of these applications are discussed in this section.

**3.2.1. Automotive high dynamic range.** Business-wise, the automotive industry is one of the most promising upcoming and growing markets for CIS systems. While some performance parameters are not relevant for the automotive application, a key requirement is a high dynamic range. Consumer devices without special consideration can yield a dynamic range of up to 80-90 dB, but automotive imaging requires a minimum dynamic range of 120 dB. Several techniques are reported in the technical literature to increase the dynamic range of a CIS, but some of them suffer from motion artifacts, which need to be avoided for autonomous driving cars.

Another important issue in the automotive world is the demand for imaging parts that are insensitive to the LED flicker present in the light sources of cars and traffic signs. To mitigate LED flicker, sophisticated approaches are required (Takayanagi & Kuroda 2012).

An image sensor that can cope with the LED flicker, as well as creating a wide-dynamic-range output signal without motion artifacts, was announced by ST Microelectronics (Tournier et al. 2018). The device makes use of two PDs with chopped exposures. The first PD makes use of multiple long exposure times, and the photo-generated charges are accumulated on the first storage capacitor. The second PD relies on multiple shorter exposure times of which the photo-generated charges are accumulated on the second storage capacitor. The multiple long and multiple short exposure times are interleaved, such that the final result is a combination of both. This combination is characterized by a wide dynamic range without motion artifacts and without LED flicker issues.

**3.2.2. Medical and capsule endoscopy.** A typical requirement for endoscopes is a small form factor because the camera needs to pass through tiny openings in the human body. Image sensors with a small footprint can be realized by extended integration of the electronic circuits on a single piece of silicon with a minimum number of leads to the outside of the chip. For these types of applications, devices with no more than four I/O pins are required. These devices were available in the days of the CCDs, but the complete peripheral circuits for driving and reading out the CCD were not integrated on the chip; instead, they were located outside of the human body and attached by wires.

In the extreme case of capsule endoscopy, the pill camera is swallowed by the patient and passes through the complete gastroenterological channel (Iddan & Swain 2003). This means that not just the sensor with its I/O, but also the lens, light source, battery, and I/O-transmission electronics (to transmit one frame every 8 seconds to the outside world), need to be inside of the capsule. Furthermore, the entire system has to be able to operate for many hours with a small, self-contained battery. A custom, very-low-power CIS was developed and produced by Photobit. This is an extreme and important example of the miniaturization achievable by using CMOS image sensors integrated along with other CMOS electronic components.

**3.2.3. High speed.** On-chip integration, in combination with stacking technology, is ideally suited for high-speed applications, as one can make optimum use of processing and handling signals in parallel. For instance, switching from a global ADC to a column-level ADC can increase the maximum frame rate of an image sensor, since the time-consuming conversion of a serial global ADC is reduced by the parallelism of column-level conversion. Note that one ADC can also serve multiple columns (Chen et al. 1990). Switching from a column-level ADC to a pixel-level ADC can further increase the maximum frame rate of the devices (Kleinfelder et al. 2001). In addition to the conversion time of the ADCs, which can be a limiting factor as far as speed is concerned,

Summarised in 741 words

- excellent summary!



make the summary more concise

+ Tools

Thinking



- ◆ The document, "Digital Image Sensor Evolution and New Frontiers," summarizes the historical progression and modern advancements of image sensor technology.

### Concise Summary

The field began with **Charge-Coupled Devices (CCDs)** (1970s), which offered high quality and low noise, but suffered from high power consumption and limited integration capabilities. The critical invention in this era was the **Pinned Photodiode (PPD)**, which reduced noise and lag.

The **CMOS Image Sensor (CIS)** revolution began in the 1990s, driven by the need for miniaturization (led by NASA) and lower power. CIS utilizes an **Active Pixel Sensor (APS)**, typically the **4-T pixel**, which allows for on-chip integration of electronics (logic, ADCs), making sensors smaller, cheaper, and more power-efficient than CCDs.

Modern advancements, spurred by the smartphone market, include:

- **Backside Illumination (BSI)**: Flips the sensor to improve light collection in small pixels.
- **Deep Trench Isolation (DTI)**: Blocks electrical and optical crosstalk between densely packed pixels.
- **3D Stacking**: Bonds a logic wafer to the sensor wafer (e.g., using Cu-Cu bonding) to enable advanced, high-speed, parallel processing directly on the chip.

New frontiers in sensor technology include:

- **Specialized Sensors**: High Dynamic Range (HDR) for automotive, tiny "pill cameras" for medical use, and **Dynamic Vision Sensors (DVS)** which record only changes in contrast ("events").
- **Quanta Image Sensors (QIS)**: Aims to detect and count single photons, using either Single-Photon Avalanche Detectors (SPADs) or standard CMOS with extremely low noise.
- **Future Trends**: Integrating **edge computing** for on-chip AI, enhancing image **security** to combat deepfakes, and developing advanced optics like **metalenses**.

Summarised in 250 words

# Summarising web page with Perplexity.AI

*Summarise <https://www.cbc.ca/news/entertainment/prince-donna-grantis-canadian-guitarist-1.7442511>*

## ✿ Answer

Donna Grantis, a Canadian guitarist, was a bandmate and friend of Prince. In 2012, Prince discovered Grantis through YouTube videos and invited her to jam at Paisley Park, eventually leading to her joining the band 3rdeyegirl. Grantis co-wrote the title track "Plectrumelectrum" for their album and toured with Prince, even getting a surprise opportunity to play the "Purple Rain" solo in her hometown of Toronto. Inspired by Prince's question, "What if we could use music to teach?", Grantis is now working on a project called humanNATURE, setting statements by climate leaders to music. She prefers to focus on Prince's musical legacy rather than the circumstances of his death, encouraging everyone to listen to his extensive catalog.

A little terse...

- 115-word summary

Use *Ask a follow-up...* box

↻ Auto

Expand on the summary



More detailed

- 310-word summary
- formatted better

## ✿ Answer

Donna Grantis, a Canadian guitarist and former bandmate of Prince, is now focusing on a project that combines her musical talents with environmental activism. Inspired by Prince's question, "What if we could use music to teach?", Grantis has embarked on a new venture called humanNATURE <sup>1</sup> <sup>3</sup>.

### humanNATURE Project

This project aims to set statements by climate leaders to music, creating a unique blend of art and activism <sup>3</sup>. Grantis has been collaborating with ocean scientists and activists to create compositions that add a musical frequency to their words <sup>3</sup>. One example of this work is her single "Drop in the Bucket," which features spoken words by climate activist Tzeporah Berman <sup>5</sup>.

### Collaboration with Environmental Organizations

Grantis has connected with various environmental organizations, including EarthPercent, a charity co-founded by Brian Eno <sup>5</sup>. She is actively involved in the climate movement, recognizing the growing power of youth activists and the unification of elder activists for change <sup>5</sup>.

### Upcoming Documentary

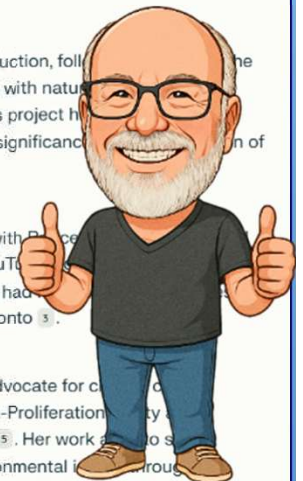
A feature documentary titled "humanNATURE" is in production, following Grantis as she creates a genre-busting album of songs in collaboration with nature scientists, environmental thought leaders, and other celebrated musicians <sup>4</sup>. This project has been supported by funding from the Hot Docs-Slaight Family Fund, highlighting its significance in the realm of music and environmental advocacy <sup>4</sup>.

### Prince's Influence

Grantis's current work is deeply influenced by her time with Prince and the band 3RDEYEGIRL in 2012 after being discovered through YouTube. Collaborating closely with Prince, she co-wrote songs, toured extensively, and had the honor of performing as playing the "Purple Rain" solo in her hometown of Toronto <sup>3</sup>.

### Advocacy for Climate Action

In addition to her musical projects, Grantis is a strong advocate for climate change awareness and action. She supports the Fossil Fuel Non-Proliferation Treaty and emphasizes the need for Indigenous-led climate justice <sup>5</sup>. Her work is driven by curiosity, new ideas, and deeper understanding of environmental issues through the universal language of music <sup>3</sup>.



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**Deep research**



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# NotebookLM

Understand **Anything**

- Google's research and note-taking platform built on Gemini
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  - PDF, Microsoft Office, audio & video files, web URLs, YouTube URLs...
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- Generate summaries, FAQs, study guides, briefing documents, podcasts, etc.
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- Transform large, complex source sets into concise, accurate overviews and insights

<https://notebooklm.google/>

Can add specific sources

Or search the web

Deselected sources that didn't appear related

The image shows the NotebookLM interface. On the left, the 'Sources' panel has a '+ Add' button and a 'Discover' button. A red box highlights the 'Discover' button. A red arrow points from the 'Discover' button to the 'Discover sources' dialog box. The dialog box has a search bar with the text 'What are you interested in?' and a text area containing a query about a cruise to Iceland. Below the text area, there are radio buttons for 'Web' and 'Google Drive'. A red box highlights the 'Google Drive' radio button. A red arrow points from the 'Google Drive' radio button to a red box at the bottom of the image. The red box contains the text 'If you have documents on Google Drive' and a bullet point 'NotebookLM can search through them'. On the right, the 'Discover sources' panel shows a list of sources. A red box highlights the 'Oceania Cruises Official Site: Cruises Around The World' source. Another red box highlights the 'Quick Tips: AI tools - Ottawa PC Users' Group' source. A third red box highlights the 'PHOTOGRAPHY & FILMING IN ANTARCTICA & MACQUARIE ISLAND - Australian Antarctic P...' source. A fourth red box highlights the 'Cruise Ship Rooms: How to Choose the Cabin That's Right for You' source. The panel also shows a 'Select all sources' checkbox, a 'Submit' button, and a '9 sources selected' indicator.

Untitled notebook

Sources Chat Studio

+ Add Discover

Discover sources

What are you interested in?

I am planning a cruise to Iceland. I want a cruise with very good food but am not concerned about on-board entertainment. The primary reason for the cruise is to photograph the northern lights. I am a serious amateur photographer with a Nikon Z8 and a variety of prime and zoom lenses. Please recommend cruise lines that would be appropriate. Please recommend how to best photograph the northern lights, particularly from the deck of a moving ship.

Find sources from:

☒ Web

☐ Google Drive

I'm feeling curious Submit

Discover sources

These sources pinpoint cruise lines known for their excellent cuisine and suggest specific Nikon Z8 settings and motion compensation techniques for capturing the Northern Lights from a moving ship.

Select all sources

Windstar Cruises Around Iceland Review with Firsthand Experience ☒

Review of Windstar Cruises highlighting excellent food and small ship experience.

Oceania Cruises Official Site: Cruises Around The World ☐

Recommends Oceania Cruises for their award-winning culinary programs.

Cruising Iceland With Silversea Cruises | Wander With Wonder ☒

Silversea review, confirming luxury, small-ship focus, and reduced entertainment concern.

Cruises with the best food? - Reddit ☒

Reddit discussion identifying cruise lines with the best food quality and variety.

Quick Tips: AI tools - Ottawa PC Users' Group ☐

Comprehensive PDF guide for photographing the Aurora from a moving cruise ship.

Recommendations for aurora photography with a Z8 or Z9? : r/nikon\_Zseries - Reddit ☒

Reddit discussion on best ISO and exposure settings for the Nikon Z8/Z9.

Best Lenses For Northern Lights Photography ☒

Guide to the best fast prime lenses for Nikon mirrorless aurora photography.

PHOTOGRAPHY & FILMING IN ANTARCTICA & MACQUARIE ISLAND - Australian Antarctic P... ☐

Tip on using a monopod versus a tripod on a constantly rocking ship.

Cruise Ship Rooms: How to Choose the Cabin That's Right for You ☐

Explains how to select a cabin area to minimize engine noise and ship vibration.

When Is The Best Time To See The Northern Lights in Iceland? | Holland America Line Cruis... ☒

Determines the optimal time of year to see the Northern Lights in Iceland.

9 sources selected Import

If you have documents on Google Drive

- NotebookLM can search through them



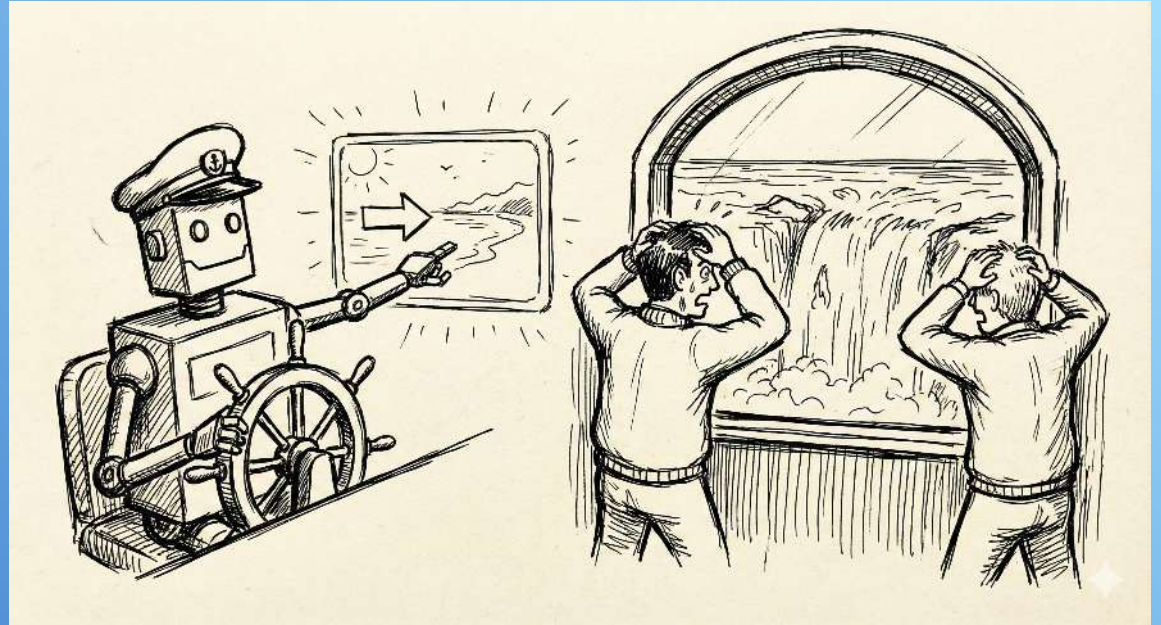




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**When hallucinations are problematic**

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# Predictive AI Hallucinations

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## Chicago newspaper prints a summer reading list. The problem? The books don't exist

Chicago Sun-Times confirmed AI was used to generate list of real authors but fake books

 [Natalie Stechyson](#) · CBC News · Posted: May 20, 2025 4:04 PM EDT | Last Updated: 3 hours ago

***New York Times*** reported:

- AI hallucinations are getting worse instead of better
- producing incorrect information more often
- *AI bots tied to search engines sometimes generate search results that are laughably wrong*



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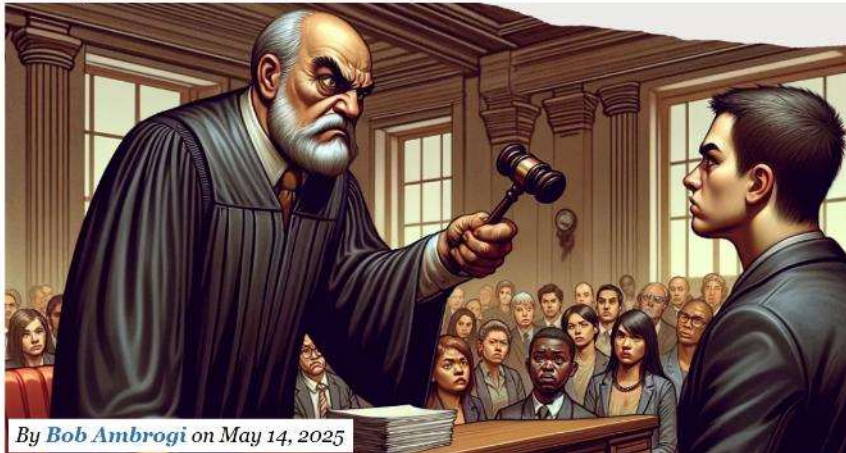


# Dangerous Predictive AI hallucinations

## LS | LawSites

Tracking Technology and Innovation for the Legal Profession

AI Hallucinations Strike Again: Two More Cases Where Lawyers Face Judicial Wrath for Fake Citations



By Bob Ambrogi on May 14, 2025

AI is creating fake legal cases and making its way into real courtrooms, with disastrous results

Published: March 12, 2024 3:15pm EDT

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**An Ontario judge tossed a court filing seemingly written with AI. Experts say it's a growing problem**

Artificial intelligence can produce false information that can make its way into court submissions

Muriel Draaisma · CBC News · Posted: Jun 03, 2025 5:00 AM EDT | Last Updated: June 3

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**B.C. couple referenced non-existent, AI-generated court rulings in condo dispute, tribunal finds**

Chatbot gave couple false information about condo alterations, says Civil Resolution Tribunal



Yasmine Ghania · CBC News · Posted: Feb 18, 2025 9:00 AM EST | Last Updated: February 18

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**U.K. judge warns of risk to justice after lawyers cited fake AI-generated cases in court**

By Jill Lawless · The Associated Press

Posted June 7, 2025 4:12 pm · 2 min read

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# Government report

418-page report

- took 18 months to complete
- included at least 15 citations for non-existent journal articles and documents

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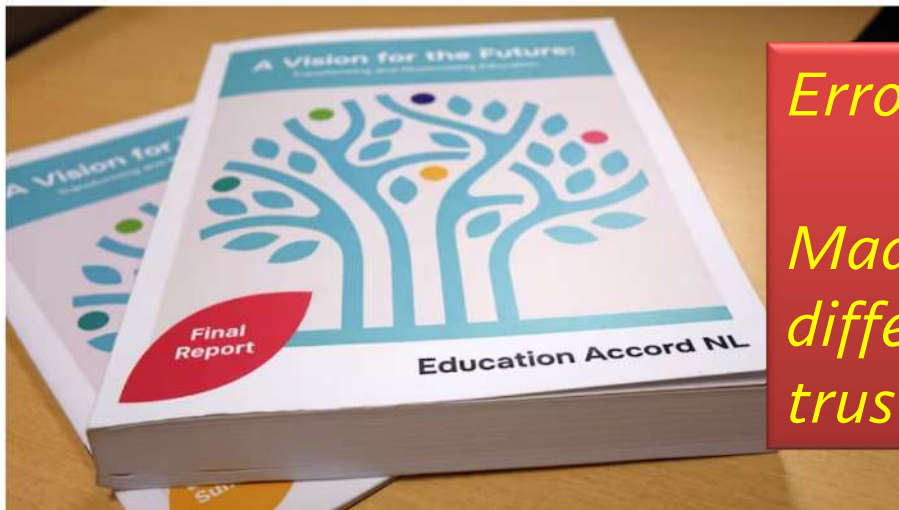
NL · New

## N.L.'s 10-year education action plan cites sources that don't exist

MUN academics say fabricated citations may have been produced using AI



Patrick Butler · Radio-Canada · Posted: Sep 12, 2025 5:30 AM EDT | Last Updated: 2 hours ago



Released On Aug. 28, 2025, the Education Accord NL final report is a 10-year roadmap for improving the province's public schools and post-secondary institutions. (Patrick Butler/Radio-Canada)

*Errors happen*

*Made-up citations are a totally different thing where you demolish the trustworthiness of the material*

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# Why AI models hallucinate

- Paper from researchers at OpenAI
  - makers of chatbot ChatGPT and text-to-video Sora
- Training methods reward confident guessing over admitting uncertainty
- Make up facts because training test scoring gives
  - full points for lucky guesses
  - zero for saying “I don't know.”
- Models trained/learn to always guess
  - even when completely uncertain about answers

<https://cdn.openai.com/pdf/d04913be-3f6f-4d2b-b283-ff432ef4aaa5/why-language-models-hallucinate.pdf>



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## Fake AI can be costly

PetaPixel

Reviews

Guides

Learn

Podcast

Newsletters

Sample Galleries

# Malaysian Couple Tricked by AI Video Travel Hours to Fake Tourist Attraction

JUL 14, 2025

MATT GROWCOOT

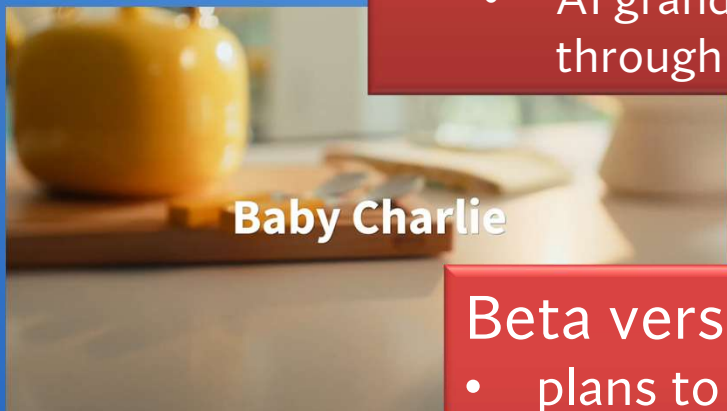


An elderly Malaysian couple drove over 230 miles (370 kilometers) from Kuala Lumpur to Perak last month after watching an AI video promoting a scenic cable car ride in the town of Kuak Hulu — only to discover upon arrival that the attraction does not exist.

# A dystopian future?

## HoloAvatar from 2wai

- *What if the loved ones we've lost could be part of our future?*
- interactive avatars of deceased relatives
- take a 3-minute video and...
  - AI grandmother interacts with her grandson from infancy through adulthood



Baby Charlie

## Beta version currently free on Apple's App Store

- plans to transition to subscription model
- expand to Android devices

## Critics called the idea *demonic* and *objectively evil*

- exploits grief and prevents healthy mourning by simulating the deceased without consent

- <https://x.com/i/status/1988283207138324487>
- <https://www.2wai.ai>





**Text to video**







# Text to video in ancient times

...that would be a couple of years ago

- strange artifact
- unrealistic faces
- strange eye motions



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for over 40 years

# Text to video in ancient times

Some foxes playing



Generated by Sora from OpenAI (text to video AI)

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**Text to video has come a long way**



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## Recent text to video



Prompt: **Extreme close up** of a 24 year old woman's eye **blinking**, cinematic film shot in 70mm, vivid colors, cinematic



Generated by Sora from OpenAI (text to video AI)

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## Recent text to video

Prompt: A **stylish woman** walks down a **Tokyo street** filled with **warm glowing neon** and animated city signage. She wears a black leather jacket, a long red dress, and black boots, and carries a black purse. She wears **sunglasses and red lipstick**. She **walks confidently and casually**. The **street is damp and reflective**, creating a mirror effect of the colorful lights. Many pedestrians walk about.



Generated by Sora from OpenAI (text to video AI)

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## And then Google's Veo3...

Introduced at Google I/O 2025 (May 20, 2025)

- part of Google Gemini AI Ultra
- US\$250/month





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# Critterz



- OpenAI-backed animated feature film
- Completion time: nine months
  - premier at Cannes Film Festival May 2026
  - typical timeline for animated feature films: 3-5 years
- Budget: under \$30 million
  - typical budget for animated feature film: \$150 - \$200 million
- Team size: 30 people
  - typical animated film has team of hundreds
- Blend of
  - human artistic direction and storytelling
  - human voice actors
  - generative AI tools for visual production

[ithy.com/a/wlr7ky87](https://ithy.com/a/wlr7ky87)

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## Creating a song

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- Use ChatGPT to create the lyrics

SUNO

- Use Suno to create the song





## What's on your mind today?

Create the lyrics for a song about a man named Sam who is retiring after 25 years at Acme Tools. In retirement, he wants to spend more time on his hobbies of woodworking and fishing. He is looking forward to camping with his son Mike, daughter-in-law Ellen, and granddaughter Sally. He has been married to his wife, Millie, for 40 years, and they have lived in the same house all that time.



# Sam's Next Chapter

Lyrics generated by  ChatGPT

- *(Verse 1)*

For twenty-five years, through rain and shine,  
Sam clocked in and gave his time.  
At Acme Tools, he built his name,  
Now it's time to leave the game.

- *(Pre-Chorus)*

But the sawdust calls, the river flows,  
A brand-new journey, everyone knows.  
With family near and skies so wide,  
Sam's got a whole new joy inside.

- *(Chorus)*

So grab your rod, carve that wood,  
Life's about to feel real good.  
Camping nights by the fire's glow,  
With Mike, Ellen, and Sally in tow.  
Millie's waiting, love so true,  
Forty years, just me and you.  
Same old house, the stories stay,  
But Sam's got dreams to chase away.

- *(Verse 2)*

The workshop's set, the lines are tied,  
Fishing poles and saws side by side.  
He'll trade his tools for a steady breeze,  
And cast his cares into the seas.

- *(Outro)*

So here's to Sam, let's raise a cheer,  
To fishing, love, and twenty-five years.  
May every cast and every grain,  
Bring you joy again and again.

## Complete lyrics

- repeated chorus
- had a 3<sup>rd</sup> verse
- removed to shorten for presentation

# Create the song at Suno.com

# SUNO

<https://suno.com>

- create a free account

1 - select *Create*

2 - Enable *Custom*

3 - paste in lyrics

4 - enter a style

- e.g. *easy listening with acoustic guitar and piano, female singer, uplifting*

5 - enter title for song

- e.g. *Sam's Next Chapter*

6 - click *Create*

The screenshot shows the Suno.com web interface. A sidebar on the left contains links for Home, Create, Library, Explore, and Search. The main content area has a 'Custom' toggle switch at the top, followed by 'Lyrics' and 'Instrumental' options. Below these are tabs for 'Write with Suno', 'Full Song', and 'By Line'. A large text box for 'Enter your own lyrics' is present, with a character count of 0/3000. Below the lyrics box is a 'Style of Music' section with a text input field and a character count of 0/200. There are also buttons for 'background jazz', 'acoustic rock', and 'dream pop'. Further down is a 'Persona' section with a dropdown menu showing 'No Persona selected'. Below that is a 'Title' section with a text input field and a character count of 0/200. At the bottom is a 'Workspace' section with a dropdown menu showing 'My Workspace'. A large 'Create' button is at the bottom right of the main content area. Red boxes and arrows highlight the following elements: 1. The 'Create' button in the sidebar. 2. The 'Custom' toggle switch. 3. The 'Enter your own lyrics' text box. 4. The 'Enter style of music' text box. 5. The 'Title' text box. 6. The 'Create' button at the bottom right.



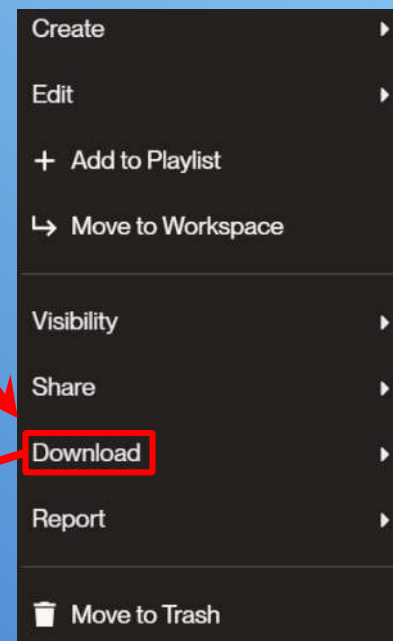
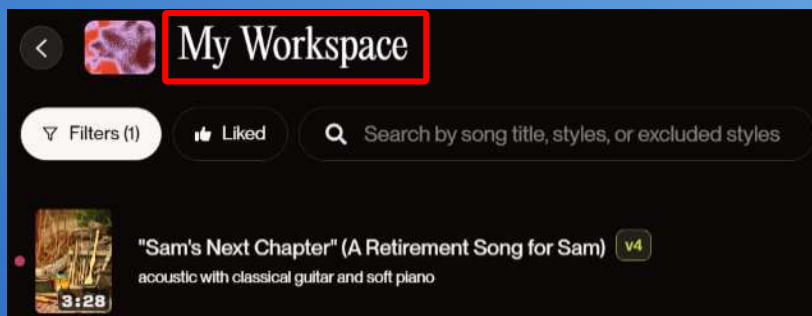
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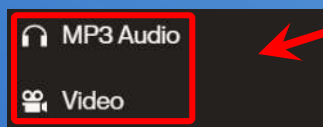
# Downloading your song

In *My Workspace*

Click the kebab menu



Audio only for free accounts



It may take several minutes before song is available for download

# Sam's Next Chapter

Lyrics generated by  ChatGPT  
Music by **SUNO**

- *(Verse 1)*

For twenty-five years, through rain and shine,  
Sam clocked in and gave his time.  
At Acme Tools, he built his name,  
Now it's time to leave the game.

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Bring you joy again and again.



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# **AI integration in web browsers**



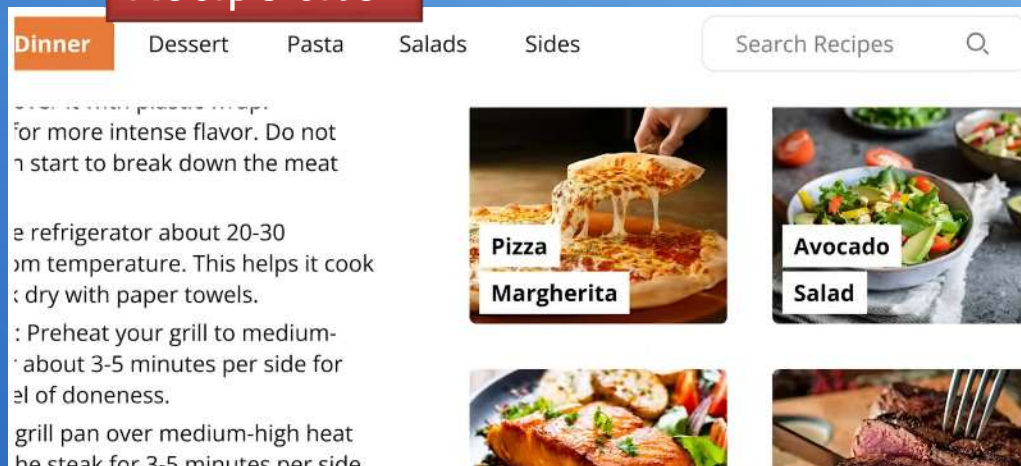
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# Google Gemini integration in Google Chrome

AI searches done in the context of your current browsing

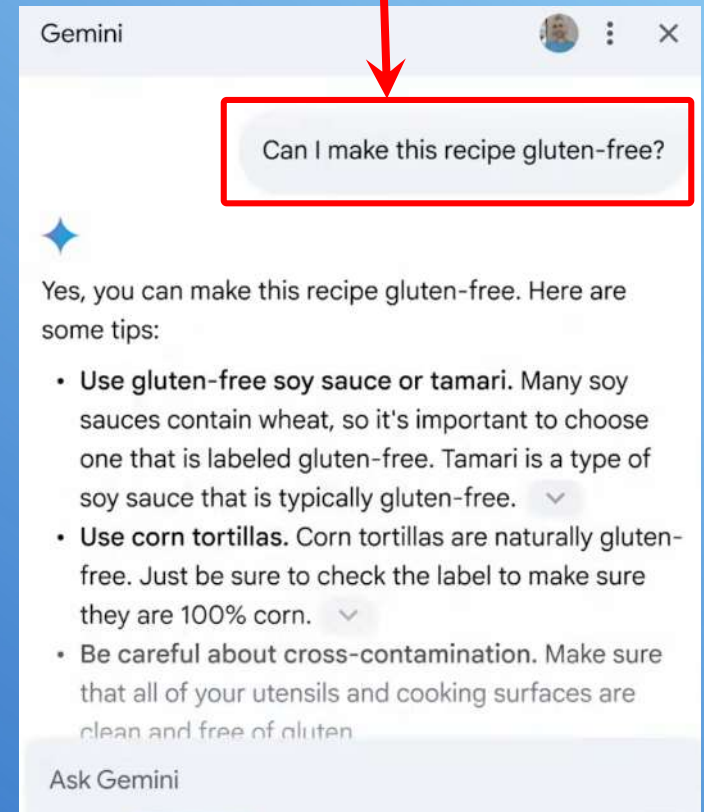
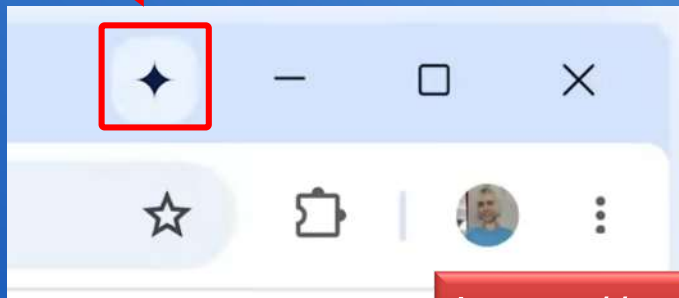
Recipe site



Fill in prompt

Can I make this recipe gluten-free?

Click Gemini button to open side panel



<https://www.youtube.com/watch?v=BBjM0SHg-aU>

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# Google Gemini integration in Google Chrome

Google Calendar integration without leaving your current browser session

Add a calendar reminder to study tonight at 8pm

◆ Google Calendar ▾

Okay, I've added a calendar reminder to study tonight at 8pm.



Google Calendar

**Study**

Tues, May 20 · 8:00 - 9:00 PM

# Google Gemini integration in Gmail

The screenshot shows the Gemini chat interface. At the top, it says 'Gemini' and '2.5 Flash'. A search bar contains the text 'search my emails for details about photographic outings'. Below this, a message from Gemini states: 'I found details about the following photographic outings in your emails, with the most recent and upcoming events listed first:'. A red box highlights the 'Current Outing (October 2025)' section, which lists:

- **Event:** Fall Colours - Barn Outing
- **Date:** Saturday, October 4th, 2025 (Today)
- **Location:** Shamig Bay Farm, located 20 minutes east of Orleans, just before Rockland.
- **Time:** You can head straight to the farm and arrive on your own time, starting from 4:30 PM.
- **Details:** The outing was changed from the original plan to visit Shamig Bay Farm, where the owner has agreed to let the group park and photograph on-site.

Below this, the 'Past Outings and Scavenger Hunts' section is shown, organized by year:

- 2024**
  - **Late January 2024:** A fun outing with K Wallace-Graner. The outing was a chance to learn how to spot interesting things and capture them.
- 2023**
  - **December 19, 2023:** Christmas Lights Downtown
  - **June 12 to June 23, 2023:** Halifax
  - **April 23, 2023:** Backyard Macros
- 2022**
  - **Fall 2022 Scavenger Hunt:** The photo club had one weekend to take photos for a scavenger hunt with 20 topics, where you could choose up to 6. One of the topics was "seeing double".
  - **September 13, 2022:** Shirley's Bay
  - **January 10, 2022:** Arboretum
- 2021**
  - **November 2021 Scavenger Hunt:** The annual photo scavenger hunt had 24 topics, including Abandonment, Beauty, Loneliness, and Tasty. Most of the photos for this outing were taken in Merrickville.
- 2020**
  - **August 8, 2020:** An outing to the Long Sault Parkway was mentioned.
  - **August 2, 2020:** An outing to Plaisance.
  - **Proposed August 2020:** Sunsets around Britannia or Shirley's Bay was proposed for an evening outing.
  - **July 2020:** Multiple visits to the rock sculptures near Remic Rapids, with one outing starting as early as 4:45 AM.

Pulled out all important details & organized them

Emails didn't all use exact terms *photographic* and *outings*

- AI interpreted things
- not a *perfect* job, but *very good*

You must give permission for Gemini to access your Gmail



# Google Gemini integration in Gmail

Gemini



summarize my most recent 10 emails

I found the content of 10 of your most recent email threads, dating from October 2, 2025, back to September 26, 2025.

Here is a summary of the topics covered:

## Cybersecurity and Online Safety

You received several emails related to cybersecurity from the National Cybersecurity Alliance (NCA) and the Canadian Internet Registration Authority (CIRA):

- **Cybersecurity Reports and Toolkits:** The NCA released the 2025 Oh Behave! Report, which highlighted findings such as 65% of respondents believing AI will make it easier for criminals to impersonate others and a 9% increase in cybercrime leading to data or monetary loss compared to 2024.
- **Safety Toolkits:** The NCA also provided free toolkits for **AI safety** to guard against AI-enabled scams and a **Vacation and Travel Security Toolkit** to help people stay safe online while traveling.
- **CIRA Newsletter:** The October 2025 CIRA Member Newsletter promoted a cybersecurity toolkit and a quiz to test your "cyber-savvy" score.

## Photography and Software

Two emails relate to photography courses and one to a tech webinar:

- **Photography Course Update:** Scott Davenport Photography announced an extension of the **LRMLS50 offer code** for the "Mastering Light & Shadow in Lightroom" course and mentioned that **ON1 Photo RAW 2026** is coming soon with a new Split Field filter. They are also considering an ON1 Photo RAW version of the course.
- **Webinar Resources:** TechSmith Customer Education sent the recording and resources for the **TechSmith Unlocked 2025** webinar, including a 10% discount code (**WEB10**) for an online purchase.

## Group/Club Business and Communication

There are three threads regarding organizational work for the Ottawa PC User's Group (OPCUG) and another group:

- **OPCUG Presentation and Q&A:** A conversation with Richard Pell involved editing a proposed newsletter blurb for Probus to promote the OPCUG, with suggestions to add information about the **Q&A sessions** and clarify the notification sign-up process.
- **CPOPC-Exec Documents:** An email to the CPOPC-Exec group served as a reminder to **review two attached documents** ("CPOPC Constitution Review.docx" and "Onboarding and Support Framework.docx") by Friday at midnight so that the lead reviewer, Andrea Fischer, can begin her work.
- **"X" Postings:** K W-G requested that you cover the "X" (Twitter) postings for them between **September 30 and October 8** while they are traveling.
- **Presentation Slides:** An exchange with Bob Herres confirmed he would be doing a share on **"Everything"** that he estimates would take **7 to 9 minutes**.

## Government Compensation and Benefits

- **Public Service Compensation:** You received a compensation email notification for September 2025 with updates on the **Public Service Health Care Plan (PSHCP)**. The notice included reminders to verify member and dependant information, how to use your benefit card at pharmacies, coverage when traveling outside of Canada, and a note about an upcoming Member Satisfaction Survey.

summarize my most recent 10 emails

- grouped by subject
- summarised each email as a bullet point

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# Microsoft Copilot integration in Microsoft Edge

<https://www.youtube.com/watch?v=1Envvyjvva8>



LinkedIn advertisement for a job

**Digital Marketer**  
Costa Rica, Central America

**What we're looking for**  
The ideal candidate for the Digital Marketing position at Movo is a strategic and results-driven professional with a deep understanding of digital marketing channels, consumer behavior, and industry trends. They possess a strong analytical mindset, allowing them to interpret data, track campaign performance, and make data-driven decisions that optimize results.

This individual is highly creative, with a knack for crafting compelling content, engaging social media strategies, and innovative marketing campaigns that drive brand awareness and customer engagement. They have excellent communication and collaboration skills, enabling them to work effectively with cross-functional teams, clients, and stakeholders. Adaptability is a key trait, as they thrive in fast-paced environments and quickly adjust to evolving digital trends, platform updates, and shifting business goals.

The ideal candidate is also proficient in digital tools such as Ads Manager, SEO tools, email marketing platforms, and CRM systems, ensuring seamless execution of marketing strategies. A proactive problem solver, they take initiative in identifying new opportunities for growth, optimizing digital campaigns, and implementing best practices to improve ROI. They are highly organized, capable of managing multiple projects simultaneously, and meet deadlines with efficiency and precision.

Above all, they are passionate about digital marketing, constantly seeking to learn, innovate, and contribute to Movo's success by driving impactful digital initiatives that generate measurable results.

**Copilot**

Can you summarize what they're looking for?

Sure can. They're looking for:  
A Digital Marketer with extensive project management and client relation experience, based in or willing to relocate to Costa Rica.

- **Position:** This role combines strategic thinking, relationship management, and digital expertise, serving as the primary client contact to drive engagement and growth.
- **Key Responsibilities:** You'll oversee campaign execution across social media, SEO, PPC, email, and content marketing while collaborating with internal teams to ensure smooth delivery.
- **Requirements:** The ideal candidate can

Message Copilot

# Web browsers from AI companies

- **Atlas** from OpenAI (ChatGPT)
  - initially only for macOS
  - <https://chatgpt.com/atlas>
- **Comet** from Perplexity.AI
  - <https://www.perplexity.ai/comet>
- **Norton Neo** (from Gen: Norton, Avast, AVG, CCleaner...)
  - <https://neobrowser.ai/>

All more tightly integrating web browsing and AI functions

- details about capabilities on the *Extras* section of the downloadable PDF



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for over 40 years

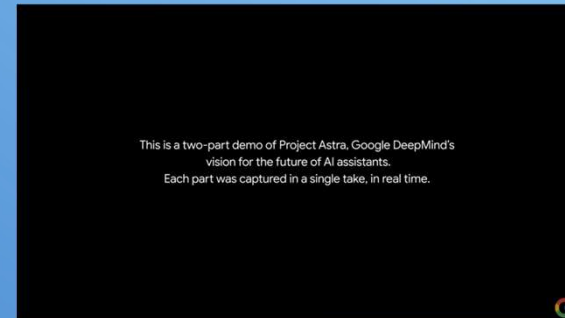
**What is coming (or maybe already here?)**

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for over 40 years

# Future: AI universal assistants



<https://www.youtube.com/watch?v=nXVvvRhiGjI>

**Using Project Astra while walking around London, England**

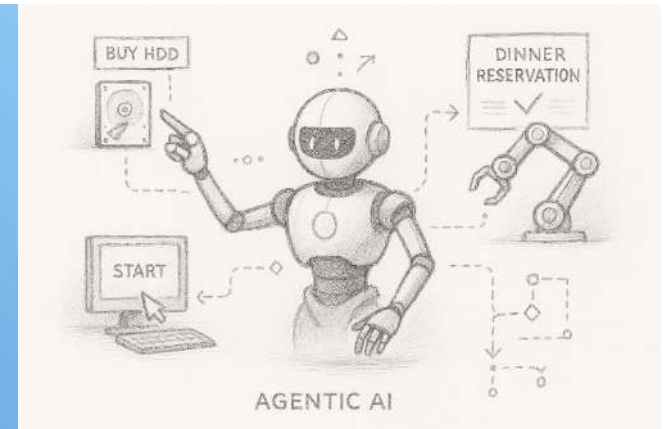
<https://www.youtube.com/watch?v=hIIIJt8JERl>

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# Agentic AI: the latest rage

- Agents interpret a goal, break it into steps, choose actions, & call tools to achieve the goal
- Monitor context, reason about options, and execute multi-step workflows in real time
- All about achieving an outcome
  - *Find a high-end steakhouse in downtown Ottawa and make reservations for 4 people the evening of January 12, 2026*
  - *When you see the Fitbit Versa 4 Smart Watch for under \$120, buy it*



Wait for the inevitable...

Agentic core features in downloadable PDF



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# AI resources

- This presentation (updated frequently)
  - <https://opcug.ca/opl/ai.pdf>
- The Rundown AI
  - free daily emailed newsletter on latest in AI
  - <https://www.therundown.ai/>
- 11 ChatGPT Tips and Tricks
  - [https://www.youtube.com/watch?v=HjUrz\\_epSTI](https://www.youtube.com/watch?v=HjUrz_epSTI)
- LTX Studio
  - good explanation of what's involved in text to video
  - <https://www.youtube.com/watch?v=cAoomBA3Kfk>
- Where AI Provides Value
  - blog post by Bruce Schneier—security expert
  - <https://www.schneier.com/blog/archives/2025/06/where-ai-provides-value.html>



# AI services (there are many more!)

General (generative & predictive)	Specialized
Microsoft Copilot • <a href="https://copilot.microsoft.com">https://copilot.microsoft.com</a>	Suno - text to music • <a href="https://suno.com">https://suno.com</a>
OpenAI ChatGPT • <a href="https://chatgpt.com/">https://chatgpt.com/</a>	HeyGen - photo to video • <a href="https://heygen.com">https://heygen.com</a>
Google ImageFX • <a href="https://labs.google/fx/tools/image-fx">https://labs.google/fx/tools/image-fx</a>	ithy - leverages many other AI engines • <a href="https://ithy.com/">https://ithy.com/</a>
Google Gemini • <a href="https://gemini.google.com/app">https://gemini.google.com/app</a>	Rytr - writing assistant • <a href="https://rytr.me/">https://rytr.me/</a>
Perchance AI Image Generator • <a href="https://perchance.org/ai-text-to-image-generator">https://perchance.org/ai-text-to-image-generator</a>	Presentations.AI – creating PowerPoint slides • <a href="https://www.presentations.ai">https://www.presentations.ai</a>
Ideogram • <a href="https://ideogram.ai/t/explore">https://ideogram.ai/t/explore</a>	wordtune – spelling & grammar • <a href="https://www.wordtune.com">https://www.wordtune.com</a>
DeepSeek R1 (NVIDIA implementation) • <a href="https://build.nvidia.com/deepseek-ai/deepseek-r1">https://build.nvidia.com/deepseek-ai/deepseek-r1</a>	NotebookLM – deep research • <a href="https://notebooklm.google">https://notebooklm.google</a> • <a href="https://www.youtube.com/watch?v=n7qbqEk4BfA">https://www.youtube.com/watch?v=n7qbqEk4BfA</a>
Claude AI • <a href="https://claude.ai/">https://claude.ai/</a>	Straico – uses up to 40 AI models: compare results side-by-side or merge results • <a href="https://straico.com/">https://straico.com/</a>
X Grok • <a href="https://x.com/i/grok">https://x.com/i/grok</a>	Grammarly – spelling, grammar, tone & clarity • <a href="https://app.grammarly.com/apps">https://app.grammarly.com/apps</a>

# Summary

- Artificial Intelligence can:
  - pull together content from many sources
  - summarise text and video content
    - which can help you decide if you want to consume the full content
  - generate astoundingly good output in the form of text, videos, and graphics
    - can be based on some existing content you have
    - can be entirely new
- Artificial Intelligence can also:
  - generate answers that are confident, plausible
    - and completely false
  - generate output completely different from what you asked for
  - hallucinate



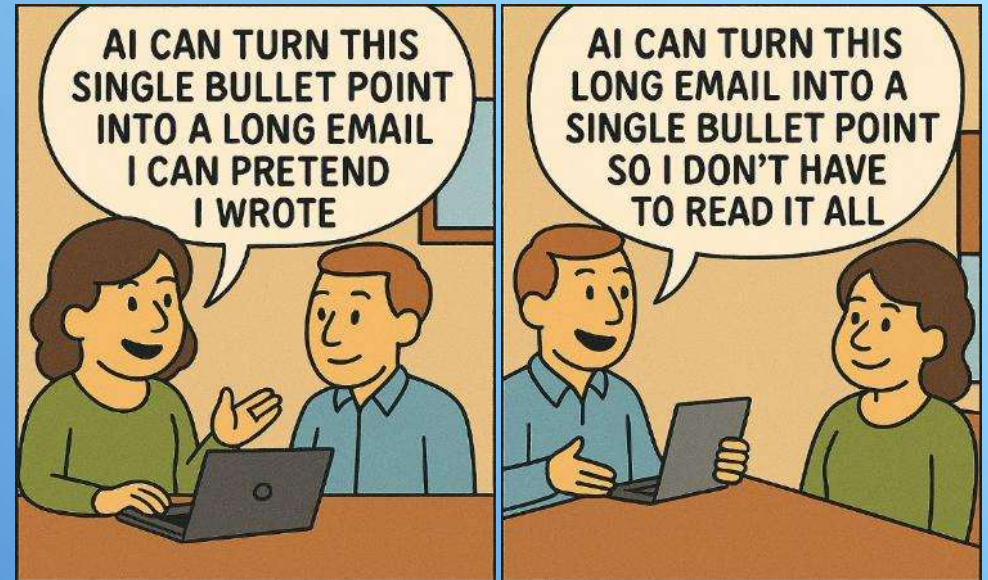
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for over 40 years

## What to do

- Realize that AI
  - can be **very powerful**
  - can be **completely wrong**
- For *Generative AI* give lots of context—even ramble—when prompting
- Take everything with *at least* a grain of salt
- **Double-check everything that is important**
- Take advantage of the power of AI





*That's all Folks!*

Chris.Taylor@opcug.ca

The presentation is available for downloading as a PDF file

**<https://opcug.ca/opl/ai.pdf>**

News about AI: **<https://opcug.ca/opl/ai-news.pdf>**

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# Ottawa PC Users' Group

*Users helping users*

- Wednesday Zoom meetings—members & non-members
  - club meetings held 2<sup>nd</sup> Wednesday of month, 7:30-9:00pm
  - weekly Q&A sessions (except 2<sup>nd</sup> Wed of month), 7:30-8:30pm
  - check out what's coming! <https://opcug.ca/#upcoming>
- Join the OPCUG - <https://opcug.ca/join-or-renew/>
  - why join? - <https://opcug.ca/why-join/>
- Ottawa Public Library presentations schedule
  - <https://opcug.ca/opl-presentations/>
  - register at the OPL website
    - <https://bibliottawalibrary.ca/en/program>



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# OPCUG online

- Web Site
  - <http://opcug.ca>
- **Member only services**
  - discussion forum
  - one-on-one remote assistance
- Monthly newsletter
  - articles, reviews, notices, & more
- Archives
  - past presentations & Q&A
- Fraud Watch
  - stay safe online
- Digital photography “how-to”s



Volume 40, Number 7

September 2023

## ARTICLE

### Really, really, deleting files by Chris Taylor

When you delete a file in Windows, the actual on-disk data is not removed. The file is usually moved to the Recycle Bin where it can be easily recovered. Even if you empty the Recycle Bin or bypass the Recycle Bin by holding down the Shift key while deleting files, the data remains on disk. All that happens is the pointers to the file are removed, making the space available for new files.



#### Free space

Storage devices eventually end up with data in all locations on the device. The free space has data that was used for files that have since been deleted. You have no way of knowing what recoverable data might be there. Some programs can target free space and securely overwrite data there. File Shredder is one program that can wipe free space.

#### Entire disks

If you want to securely delete all data on an entire storage device, HDDShredder (<https://www.miray-software.com/products/applications/bdshredder.html>) is available in free and commercial versions. The free version should be sufficient for the vast majority of users. The website details the additional capabilities in the commercial versions.

Another popular program for securely erasing all data on storage devices is the free and open-source DBAN

*(Continued on page 7)*

#### Recovering deleted files

Utilities to recover deleted files date back to *Unerase* in the first version of the Norton Utilities in 1982. They continue to this day with dozens of free and commercial programs available for Windows, macOS, Linux, Android, and iOS.

If you are in a high-security situation, please ignore this article. It is intended for the average home or business user whose adversaries are not about to use magnetic force microscope techniques to recover data. If you are likely to have CSIS looking for your deleted data, you need to go well beyond what I recommend here.

#### Making data unrecoverable

When you want to dispose of a storage device, you should ensure all sensitive data is deleted and *unrecoverable*. This can be achieved by physical destruction of the storage device: hard disk drive (HDD), solid state drive (SSD), flash drive, etc. or—if you want the storage device to be reusable—by over-writing the data areas of the disk with random data, obliterating the original data.

Some secure deletion programs boast of capabilities such as the Gutmann algorithm, which overwrites all data with 35 passes. For the average computer user, I wouldn't worry beyond a single pass.

There are many programs available, both free and commercial, for secure data removal. The programs I list are not necessarily the best—they are simply programs that have been around quite a while (have stood the test of time), are free, and have been used successfully either by me or other members of OPCUG.

Be careful using secure deletion programs. By their very nature, there is no “undo” button! There are several levels of overwriting data: individual files, free space on the drive, and the entire disk.

#### Individual files

If you just want to make a few files unrecoverable, there are programs that can target individual files or folders of files. One example is the free and open-source program File Shredder (<https://www.filesreducer.org/>). It is very simple and straightforward to use.

#### Inside this issue:

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Next Meeting: **WEDNESDAY, September 13<sup>th</sup>, 2023**

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## Extras

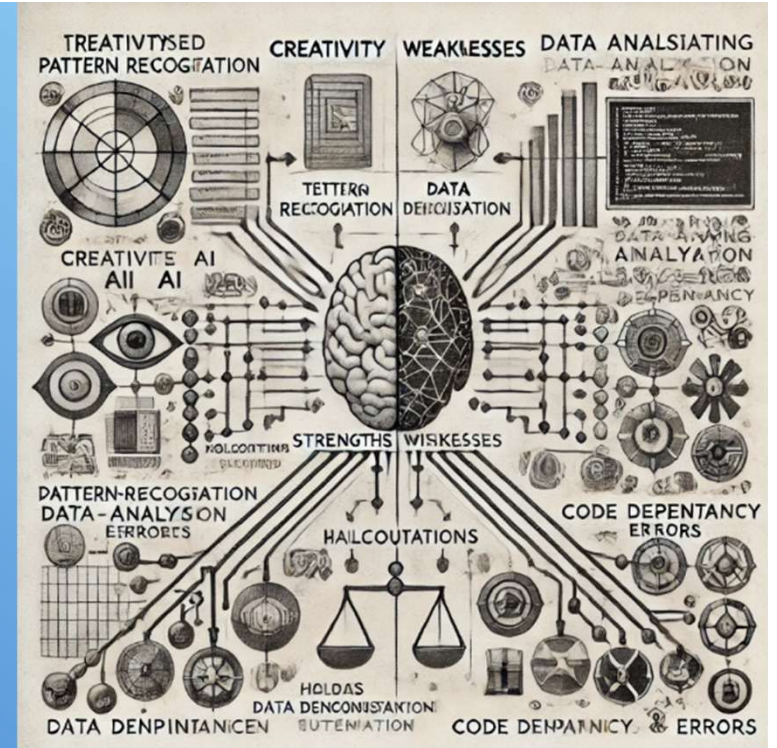
a bunch of slides with additional examples and details

- *too much information for the live presentation*

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## Some strengths & weaknesses of a few AI tools

Take these with a grain of salt

- things change by the day!



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# Gemini

<https://gemini.google.com/app>

## ■ Strengths

- provides nuanced responses
- processes various types of input:
  - text, visuals, code, etc.
- excels at handling long, complex reasoning chains

## ■ Weaknesses

- struggles with some basic tasks
- can provide incorrect/misleading information
  - critical evaluation of output required
- aggressive content filtering can block many responses
- frequently hallucinates, providing info not grounded in reality

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# Perplexity.AI

<https://perplexity.ai>

## ■ Strengths

- real-time web access
- quick factual answers
- highly accurate
- pulls together information from multiple sources and summarises findings
- provides citations to allow easy verification of sources
- handles various tasks such as research, content creation, summarisation, & market research

## ■ Weaknesses

- may struggle with complex, multi-step reasoning or deep technical topics requiring significant expertise

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# Perplexity.AI “Pro” features

- Break down complex questions into smaller goals
- Advanced math and programming capabilities
- Multiple AI models: GPT-4, Claude 3, & Gemini
- Advanced image generation tools
  - DALL-E 3, Playground V2.5, & Stable Diffusion
- File uploads for comprehensive analysis
- Wider range of trustworthy sources



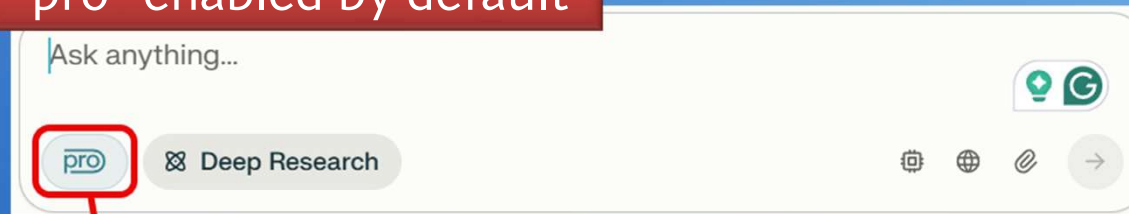
OPCUG



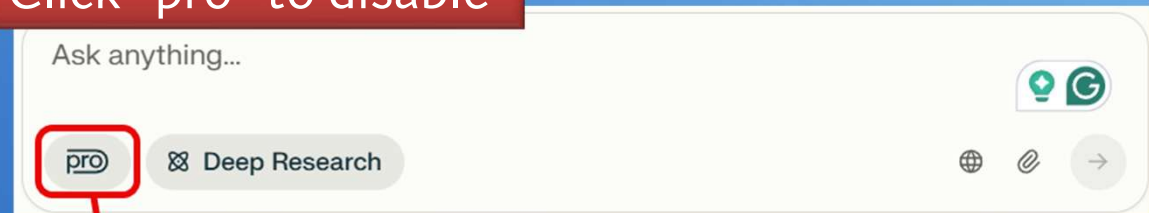
# Perplexity.AI “Pro” features

- Free accounts can do 5 free pro searches per day
- Don't burn up your 5 free pro searches

“pro” enabled by default



Click “pro” to disable



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# ChatGPT

<https://chatgpt.com/>

## ■ Strengths

- natural language processing
  - excels at understanding & generating human-like text
- excels at creativity and conversations
- context awareness
  - maintains context across multiple conversation turns
  - build on concepts without needing to start over

## ■ Weaknesses

- known to have problems with factual accuracy
- often generates hallucinations
- struggles to grasp nuances like humor or sarcasm

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# Perchance AI

<https://perchance.org/ai-text-to-image-generator>

## ■ Strengths

- completely free to use & requires no registration
- unlimited usage
- creative writing assistance:
  - ideas, plot outlines, character backgrounds, etc.
- text generation:
  - blog posts, articles, social media content
- intuitive & easy to use

## ■ Weaknesses

- generates relatively low-resolution images: max 768x512
- often generates odd artifacts
- known to generate not-safe-for-work content



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# Claude AI

<https://claude.ai/>

## ■ Strengths

- excels at understanding complex concepts and providing detailed, accurate responses
- can process large amounts of text quickly, reading up to 30 pages per second
- handles various tasks including writing, analysis, coding, math, research, and creative projects
- can generate charts and diagrams to present information in a more digestible format

## ■ Weaknesses

- focuses primarily on text generation
- lacks features like image or audio creation
- knowledge base is typically several months old
- cannot access real-time information from the internet
- free version may struggle with intricate, multi-step tasks or scenarios requiring nuanced reasoning

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# Ideogram AI

<https://ideogram.ai/>

## ■ Strengths

- powerful text-to-image generation tool
- excellent text rendering
  - excels at integrating clear and accurate text into generated images
- high image quality
  - visually appealing images with high sharpness, resolution, & clarity
- strong prompt adherence
  - accurately generates images matching user-provided text descriptions
- easy to use, even for beginners
- multiple image styles and supports various artistic preferences
- generous free tier

## ■ Weaknesses

- may struggle with representing specific details or concepts accurately in generated images
- difficulties achieving photorealistic results, particularly with facial features
- mastering advanced features and achieving specific results may require practice and experimentation
- free accounts have a slow queue that can take several minutes
- free accounts get 10 credits per week. Generation of an image takes 2 credits

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# Microsoft Copilot (in Microsoft 365)

<https://copilot.microsoft.com>

## ■ Strengths

- integrated into Microsoft 365 products
  - Word, PowerPoint, Excel, Outlook
- automates repetitive tasks
  - drafting emails, generating reports, summarising content, etc.
- provides smart suggestions for writing & design
- generate ideas, rephrase text
- in Excel, it can generate charts, analyse trends, and suggest formulas
- in PowerPoint, it can create slides and suggest layouts.
- assists with grammar & clarity in Outlook and Word

## ■ Weaknesses

- can generate incorrect or misleading information
  - especially in summarisation
- may produce hallucinations in text responses
- struggles understanding nuanced instructions or complex requirements



# Web browsers from AI companies

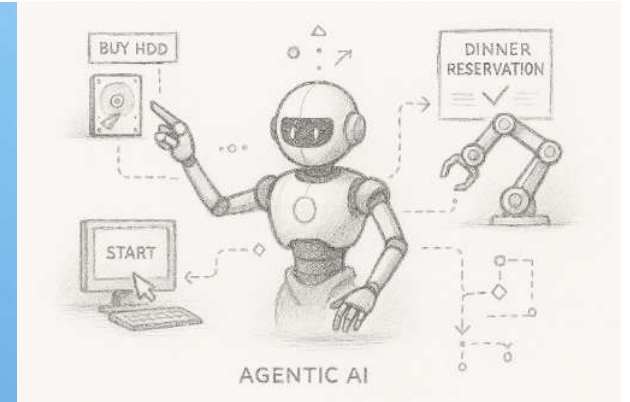
- Atlas from OpenAI (ChatGPT) (initially only for macOS)
  - embeds ChatGPT into the web experience
  - ask questions & summarise content about web pages
  - URL bar functions as a prompt for ChatGPT
  - transforms search results into conversational answers
  - agentic capabilities to perform autonomous tasks
  - <https://chatgpt.com/atlas>
- Comet from Perplexity.AI
  - streamlines searching & summarising content across sites
  - analyse emails, prepare for meetings, automate note-taking, schedule events, and draft responses, all from within browser
  - understands highlighted text, YouTube videos, & documents
  - agentic browsing to perform autonomous tasks
  - <https://www.perplexity.ai/comet>
- Norton Neo (from Gen: Norton, LifeLock, Avast, Avira, AVG, CCleaner...)
  - search, generate, and take action in one powerful bar
  - tableless browsing: Neo organizes everything, so you don't have to
  - AI previews and key takeaways at a glance
  - <https://neobrowser.ai/>

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# Agentic AI core features



- **Autonomy**
  - acting without step-by-step instructions once given a goal
- **Contextual awareness**
  - tracking user state, history, and environment
  - iterative planning: revising plans as new data arrives
- **Orchestrate multiple AI models & services to perform complex, multi-system flows**
- **Self-optimize over time, improve choices based on past interactions & outcomes**

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## Random extras

a bunch of slides with additional examples of things  
already shown in the main presentation



Old wise man hugging a unicorn,  
soft light, warm and golden tones,  
tenderness, gentleness, in the style  
of michelangelo



Gemini Nano Banana

- uploaded image to left
- *Remove horn*
  - *but then it became a horse* 😊

Nov 2025



Gemini Nano Banana

- generated from prompt above

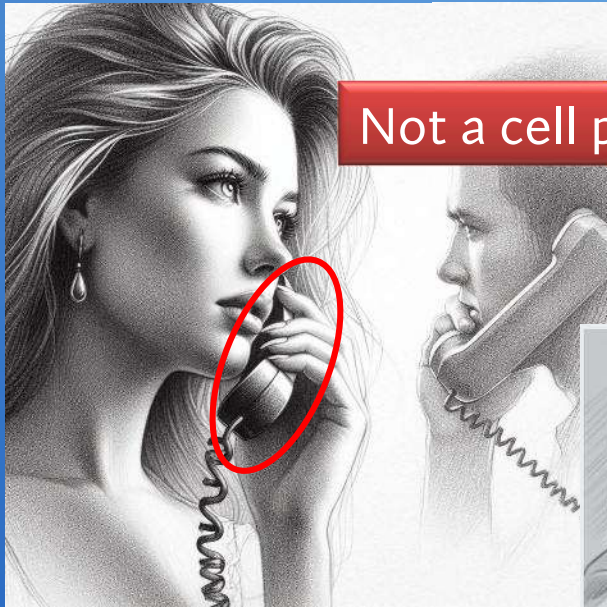
Nov 2025





*Pencil sketch of a woman talking on a cell phone.  
She is facing a man who is talking on a landline*

 **Copilot**



Not a cell phone

 **ideogram**

Two phones???

Strange way  
to hold phone



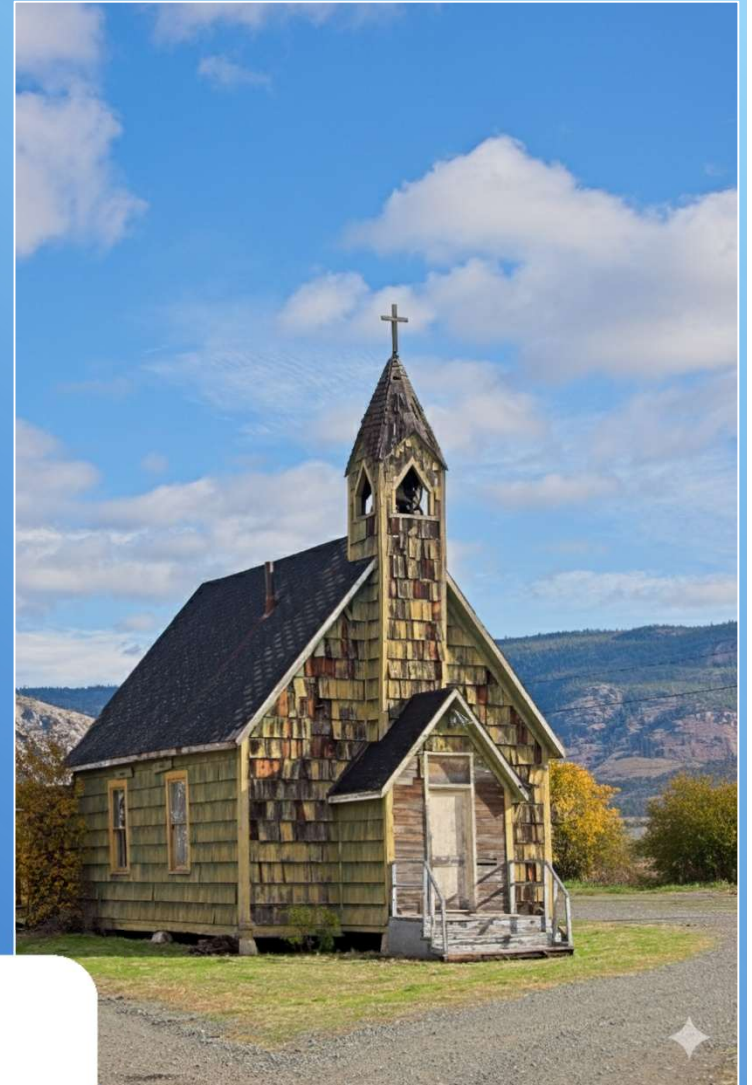
Where is this handset plugged in ???




Landline on the street???







Remove power line, the house on the right, and the sign and post on the left side of the building.

+  Tools

Fast ▾



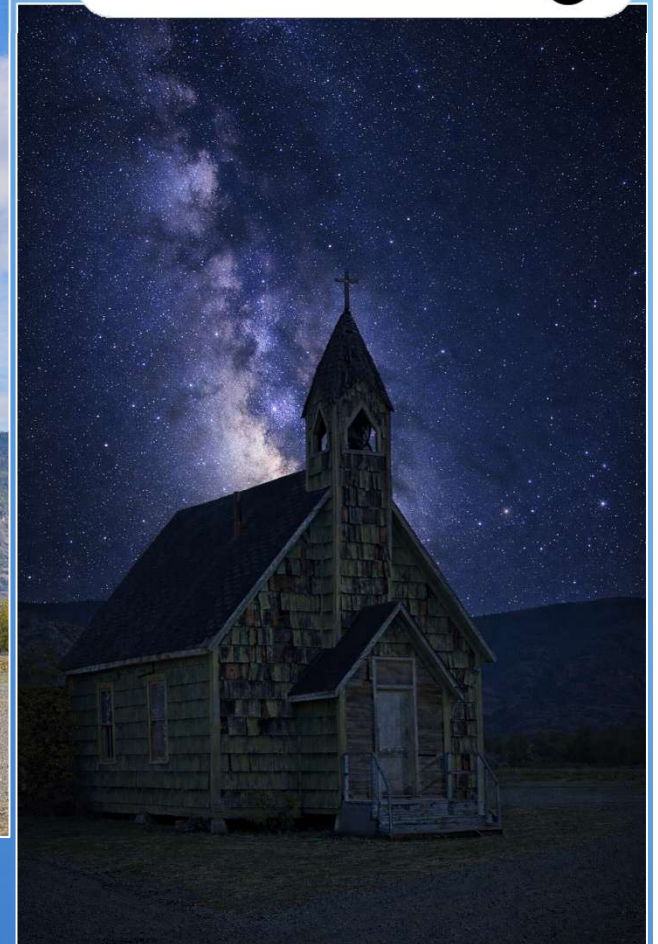




Remove power line, the house on the right, and the sign and post on the left side of the building.



Make it a night scene with the Milky Way in the sky



# Generate a podcast with two people discussing the latest advancements in digital imaging, including sensor technology and AI advancements in post-processing.

**Podcast Title:** Pixel Perfect: Exploring the Future of Digital Imaging

**Hosts:** Alex (tech-focused) and Sam (creative enthusiast)

[INTRO MUSIC FADES IN]

**Alex:** Hey everyone, and welcome to *Pixel Perfect*! I'm Alex, your resident tech geek, and I'm here with my co-host Sam, who's obsessed with making every shot Instagram-worthy.

**Sam:** Guilty as charged! Today, we're diving into the wild world of digital imaging—sensors, AI, and all the magic that makes our photos pop.

**Alex:** Exactly. From smartphone cameras to pro gear, the tech is evolving faster than ever. Let's start with sensor advancements. Sam, you've been geeking out over stacked CMOS sensors lately, right?

## SEGMENT 1: Sensor Tech Breakthroughs

**Sam:** Oh yeah. Stacked CMOS is a game-changer. Brands like Sony and Canon are using these to boost speed and low-light performance. Think lightning-fast autofocus and no more blurry pet photos!

**Alex:** And it's not just speed. Sony's new multi-layer sensors split RGB data onto separate layers—like a sandwich of light—giving truer colors and less noise. Imagine sunset shots that actually look like sunsets!

**Sam:** Smartphones are jumping in too. The 1-inch sensor in phones like the Xiaomi 13 Pro is massive for a pocket device. It's like carrying a DSLR... that also texts.

**Alex:** But bigger sensors mean chunkier phones. Will people trade sleekness for quality?

**Sam:** [laughs] Maybe. But for creators, it's worth the trade-off. Next up: AI wizardry!

## SEGMENT 2: AI in Post-Processing

**Alex:** AI's reshaping editing. Tools like Topaz Labs' Denoise AI can salvage grainy shots. It's like a time machine for bad lighting!

**Sam:** And Adobe's new *Generative Fill*? It can add realistic elements to photos. Lost a detail? Just... invent it. But Alex, doesn't that risk authenticity?

**Alex:** Totally. Deepfakes are a concern. But Adobe's pushing *Content Credentials* to track edits. Ethics need to keep pace with innovation.

**Sam:** On the creative side, AI-powered HDR and night modes are mind-blowing. My phone now takes Milky Way shots that rival my old DSLR.

**Alex:** It's democratizing photography. Pros get new tools, amateurs get pro results. But will AI ever replace the human eye?

**Sam:** Never. It's a tool—like a high-tech paintbrush. The artist's vision still rules.

[OUTRO]

**Alex:** That's a wrap! Sensors are getting smarter, AI is getting creative, and the future's bright (with perfect exposure).

**Sam:** Thanks for tuning in! Drop us a comment: Should we tackle VR photography next? Or AI video editing?

**Alex:** Until next time, keep snapping—and stay pixel-perfect.

[OUTRO MUSIC FADES OUT]

## Episode Notes:

- Follow *Pixel Perfect* on social media for imaging tips.
- Mentioned brands: Sony, Canon, Adobe, Topaz Labs.
- Ethical AI discussion inspired by Adobe's Content Authenticity Initiative.

## 443-word podcast

- Intro
- Sensor Tech Breakthroughs
- AI in Post-Processing
- Outro

## Deepseek-r1

- <https://build.nvidia.com/deepseek-ai/deepseek-r1>



# View Reasoning

Okay, I need to generate a podcast script where two people discuss the latest advancements in digital imaging, focusing on sensor technology and AI in post-processing. Let me start by outlining the structure. Podcasts usually have an intro, segments with discussions, and an outro. The hosts should have distinct names and maybe some personality traits to make the conversation engaging.

First, the intro: I'll need a catchy title. Maybe something like "Pixel Perfect: Exploring the Future of Digital Imaging." The hosts could be Alex and Sam. Alex can be the tech-sawy one, while Sam is more into the creative side. The intro should welcome listeners, introduce the topic, and set the stage for the discussion.

Next, the first segment on sensor technology. I should cover recent advancements. Stacked CMOS sensors are a big thing now, allowing faster readouts and better performance. Mention brands like Sony, Canon, Nikon. Then talk about multi-layer sensors with separate RGB layers for better color accuracy. Also, larger sensors in smartphones. Discuss how this bridges the gap between phones and traditional cameras.

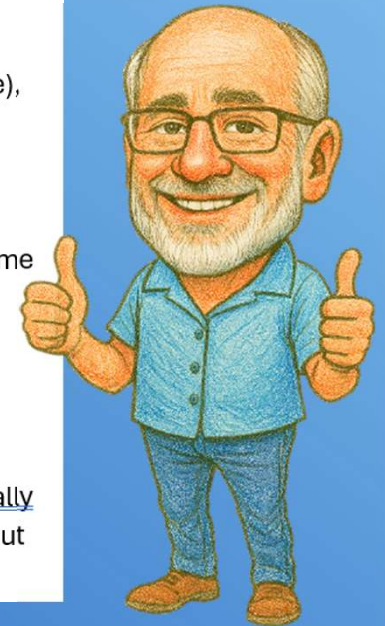
Then, move to AI in post-processing. Topics could include AI noise reduction tools (Topaz, Adobe), computational photography techniques (HDR, night mode), and generative AI filling in details. Ethical considerations here are important—deepfakes, authenticity. Maybe mention Adobe's Content Credentials as a solution.

The conversation should flow naturally, with each host building on the other's points. Include some examples and real-world applications to make it relatable. Add some banter to keep it lively.

Finally, the outro should summarize the key points, thank the audience, and encourage engagement. Maybe suggest leaving comments for future topics.

I need to ensure technical terms are explained but not dumbed down. Keep the tone conversational. Check for logical flow between segments. Make sure both hosts contribute equally and the discussion is balanced between technical and creative aspects. Avoid jargon overload but still be informative. Add some enthusiasm to keep listeners interested.

334-word reasoning





# Expand the podcast

Podcast Title: Pixel Perfect: The Deep Dive into Digital Imaging's Cutting Edge  
Hosts: Alex (tech-focused) and Sam (creative enthusiast)  
Runtime: ~60 minutes

## [INTRO MUSIC FADES IN – FUTURISTIC SYNTHWAVE]

Alex: Welcome back to *Pixel Perfect*, the show where we dissect art behind the algorithm! I'm Alex, your guide to all things sensor wizardry.

Sam: And I'm Sam, here to remind you that even the fanciest tech episode is a MONSTER deep dive—sensor breakthroughs, AI's camera might soon read your mind. Buckle up!

Alex: We've got listener questions, a guest interview with a sensor whiz, and whether AI will replace photographers. Let's start with the nitty-gritty.

## SEGMENT 1: Sensor Technology – Beyond Megapixels

(20 minutes)

Alex: Sensors are the eyes of digital imaging. Forget megapixels! Sam, remember when smartphone sensors were the size of a grain of rice?

Sam: Now they're closer to a Cheerio! The Xiaomi 13 Pro's 1-inch new quad-layer sensor is wilder. Alex, break it down.

Alex: Traditional sensors stack photodiodes and circuitry. Sony's dedicated layer for RGB color data and a layer for depth/light info. PhD in physics. Less noise, better dynamic range, and...

Sam: And computational RAW! Canon's EOS R5 Mark II uses sensors before they're even written to the card. It's like having a tiny editor.

Alex: But here's the kicker: quantum dot sensors. Researchers light more efficiently. We're talking sensors that see in near-darkness into confetti.

Sam: Low-light wedding photographers, rejoice! But what about price—\$6,000 for a body?

Alex: True, but mid-range cameras are adopting stacked sensors for \$2,500. Even phones like the iPhone 15 use photon-engineered sensors.

Listener Call-in: "How do larger sensors impact lens design?"

Alex: Great question! Larger sensors need larger lenses, which craves wide apertures like f/1.2. But physics fights back—expect distortion correction.

Sam: Meanwhile, M43 cameras are laughing. "Size matters!"

## SEGMENT 2: AI Post-Processing – From Fixing to Inventing

(25 minutes)

Sam: Let's talk AI. It's not just removing photobombers anymore. Luminar Neo's "AI Sky Replacement" to turn my rainy vacation. Debatable. Cool? Absolutely.

Alex: Tools like DALL-E and Midjourney are trained on billions of images integrated into Photoshop. Type "add a neon dinosaur to this landscape," and you're a purist. Does this freak you out?

Sam: Part of me hates it. But another part loves that a kid in Riverview can generate a photo of a half-AI-generated dinosaur.

Alex: Cue the Content Authenticity Initiative. Adobe's tagging AI-generated content as a photo's "DNA." But spoofing that is trivial.

Case Study: National Geographic's AI Controversy

Sam: Remember when NatGeo used AI to enhance a wildlife photo? The photographer argued it was just "digital darkroom" work.

Alex: Yes. Ansel Adams dodged and burned; we use Denoise AI. But—big out—AI can't replace intent. If you prompt "make this photo have no soul."

Guest Interview: Dr. Priya Rao (AI Imaging Researcher, MIT)

Alex: Dr. Rao, your team works on context-aware AI. What's new? Dr. Rao: Imagine AI that knows the story behind a photo. It detects brightness. Or recognizes a historic monument and applies perspective correction. Or recognizes a historic monument and applies perspective correction.

Dr. Rao: Exactly. The next step is adaptive AI that learns your style as a photographer. It suggests edits to match your portfolio.

Alex: Mind-blowing. Dr. Rao: I suggest you get a cyborg assistant.

## SEGMENT 3: Future Gazing – Sensors in 2030 and Beyond

(15 minutes)

Sam: Your phone's putting us to sleep. Alex: Sure! With them, merges them, even uses ultrasonic sensors.

Sam: It's like I'm in a sci-fi movie.

Alex: Phase One's new cameras use lidar to map a scene's depth, so you can refocus after shooting. Think *Light Field* cameras, but without the price tag.

Sam: And let's not forget AI video. Runway ML can turn daylight clips, and even remove objects frame-by-frame. YouTubers are loving it.

Listener Q&A: "Will RAW files become obsolete if AI can 'reprocess' them?"

Alex: RAW is safe... for now. AI can't invent data that wasn't captured where sensors capture extra metadata for reprocessing—is this the future?

## SEGMENT 4: The Ethics Debate – Deepfakes, Art, and Accountability

(20 minutes)

Sam: Let's get spicy. A photographer in Norway lost a job because they generated the ad. "Are we entering a post-human creative era?"

Alex: Scarily, yes. But think of the upside: indie filmmakers can generate the key is transparency. If an image is AI-generated, label it.

Sam: The EU's pushing laws to ban undisclosed AI content. But what about deepfakes?

Alex: Blackmail? NFTs? (groans) Maybe. Adobe's CAI uses cryptographic signatures. Real talk: this'll take a global coalition.

Debate: "AI Will Make Human Photographers Obsolete by 2030." Sam: Alex, defend that statement.

Alex: Fine. AI will handle commercial work—product shots, real estate.

## [OUTRO]

Sam: Thanks for joining this marathon episode! Follow us @PixelPerfectPod for a free guide on "AI Editing Without Losing Your Soul."

Alex: Next week: Can AI compose a better symphony than Beethoven? (Spoiler: No, but it's trying.)

Sam: Keep shooting, stay curious, and remember—bad lighting is just a future Instagram filter.

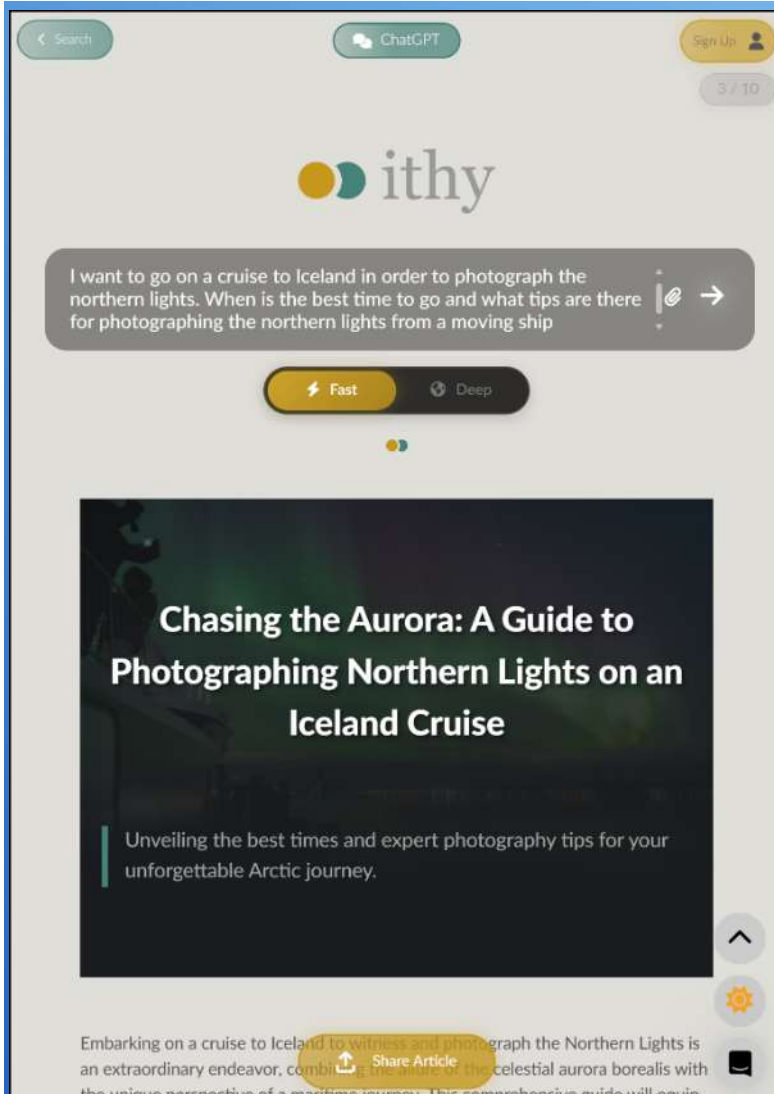
## [OUTRO MUSIC FADES OUT – RETRO 8-BIT REMIX]

Episode Notes:

- Featured Tech: Sony quad-layer sensors, Adobe Firefly, Phase One lidar tech, Runway ML.
- Ethics Resources: Content Authenticity Initiative, EU AI Act summary.
- Guest: Dr. Priya Rao's MIT lab: [www.mit.edu/ai-imaging](http://www.mit.edu/ai-imaging)
- Listener Q&A: Submit questions at [pixelperfectpod.com](http://pixelperfectpod.com)

# 1,290-word podcast (3 times the original)

- Intro
- Sensor Technology – Beyond Megapixels
- AI Post-Processing – From Fixing to Inventing
- Computational Photography – The Invisible Revolution
- The Ethics Debate – Deepfakes, Art, and Accountability
- Future Gazing – Sensors in 2030 and Beyond
- Outro



**introduced 2025-05-04**



Uses multiple AI engines

- ChatGPT
- Google Gemini
- Perplexity AI
- Meta AI
- & more

Generated a report:

- web page
- downloadable PDF file
  - 4 pages
  - 2,136 words
  - included 53 references
  - [ithy.com/a/wbd8ui96](https://ithy.com/a/wbd8ui96)

## References

-  [nationalgeographic.com](https://nationalgeographic.com)  
How to photograph the Northern Lights, according to an expert - National Geographic
-  [davebrownphotography.com](https://davebrownphotography.com)

**Can you imagine a better reference?**

## Chasing the Aurora: Your Ultimate Guide to Photographing Northern Lights on an Iceland Cruise

Unlock the secrets to a breathtaking Northern Lights photography expedition at sea.



### Key Highlights for Your Northern Lights Cruise and Photography

- **Optimal Viewing Season:** The prime time to witness the Northern Lights in Iceland is between late August and early April, with peak activity often observed from September through March, especially during the equinox months of September and March.
- **Maximize Your Chances:** Cruises offer a unique advantage by moving away from city light pollution, providing darker skies and enhanced visibility. Look for tours specifically designed for Northern Lights viewing, often departing from Reykjavik's Old Harbour.
- **Photography from a Moving Ship:** Capturing the aurora from a cruise ship requires specific camera settings and techniques, including using a wide-angle lens, high ISO, and a compact tripod to minimize motion blur from the ship's movement.

Embarking on a Northern Lights cruise to Iceland offers an unparalleled opportunity to witness one of nature's most spectacular phenomena, the Aurora Borealis. The dynamic interplay of solar activity and Earth's magnetic field creates a dazzling light show that is best experienced under dark, clear skies. Combining the comfort of a cruise with the pursuit of the aurora, especially with the unique vantage point of the open sea, promises an unforgettable adventure. This guide will delve into the best times to plan your trip and provide essential photography tips to help you capture these ethereal lights from a moving ship.

### The Ideal Time to Witness the Aurora in Iceland

#### Timing Your Expedition for Peak Auroral Activity

The success of your Northern Lights expedition largely hinges on timing. While the aurora is a natural phenomenon that cannot be guaranteed, strategic planning can significantly increase your chances of a mesmerizing display. Iceland's geographical location makes it a prime destination for aurora chasing.

#### Understanding the Northern Lights Season

The Northern Lights season in Iceland generally spans from late August to early April. During these months, the nights are sufficiently long and dark, which is crucial for visible aurora displays. The extended hours of darkness provide a wider window for the lights to appear. Specifically, the months between September and March are often cited as the best for viewing, with some sources highlighting October through February as the prime time due to the darkest skies and potentially more frequent displays.

It's important to note that solar activity plays a significant role in the intensity and frequency of aurora displays. Solar Cycle 25, which began in December 2021, is expected to see increased solar activity, with a peak anticipated between 2024 and 2026. This period could offer even more dramatic auroras, making upcoming years particularly promising for a Northern Lights cruise.

Another crucial factor is the equinox. Solar activity tends to be highest during the equinox months of September and March, particularly around the 21st of each month. This increased solar activity can lead to more vibrant and active aurora displays.

While summer cruises to Iceland (June, July, August, and early September) are excellent for whale watching and enjoying extended daylight, they are generally not ideal for Northern Lights viewing due to the presence of the Midnight Sun, which prevents the sky from getting dark enough. Therefore, if aurora photography is your primary goal, target the darker winter months.

## Chasing the Aurora: A Guide to Photographing Northern Lights on an Iceland Cruise

- Key Highlights for Your Aurora Photography Cruise
  - Optimal Viewing Season
  - Essential Photography Gear
  - Mastering Camera Settings
- Navigating the Best Time for Your Northern Lights Cruise
  - The Aurora Season: When Darkness Reigns
  - Prime Time of Day: The Witching Hours
  - Solar Activity and Cruise Benefits
- Essential Gear for Shipboard Aurora Photography
  - Camera and Lens Selection
  - Stability and Support
  - Accessories for Cold and Comfort
- Mastering Photography Techniques from a Moving Ship
  - Crucial Camera Settings for Aurora
  - Tips for Shooting from a Moving Ship
  - Visualizing Northern Lights Photography
- Choosing Your Iceland Northern Lights Cruise
  - Popular Cruise Lines and Itineraries
- Frequently Asked Questions about Northern Lights Cruises to Iceland
  - Is it better to see the Northern Lights from a cruise or on land?
  - What factors affect the visibility of the Northern Lights?
  - Can I use my smartphone to photograph the Northern Lights?
  - What if the Northern Lights don't appear on my cruise?
- Conclusion
- References



# Too much information?

Have ChatGPT summarise the report



The article *Chasing the Aurora: A Guide to Photographing Northern Lights on an Iceland Cruise* offers a comprehensive overview for travelers aiming to experience and photograph the Northern Lights from the unique vantage point of a cruise ship.

- 427-word summary

The screenshot shows a ChatGPT chat window. At the top, there's a search bar and a 'Sign Up' button. Below that, a red box highlights the 'ChatGPT' button, with a red arrow pointing to it from the text 'Have ChatGPT summarise the report'. The main content area shows a prompt: 'Intelligently analyze this article, then provide additional insights: https://ithy.com/article/g6j31t'. Below the prompt, the summary of the article is displayed. The article title is 'Chasing the Aurora: Your Ultimate Guide to Photographing Northern Lights on an Iceland Cruise'. The summary includes 'Key Takeaways' and 'Additional Insights'.

**Key Takeaways:**

- **Optimal Viewing Season:** The Northern Lights are best observed in Iceland between late August and early April, with peak activity often occurring during the equinox months of September and March.
- **Cruise Advantages:** Cruises departing from Reykjavik's Old Harbour venture into open waters, away from city light pollution, providing darker skies and enhanced visibility for aurora viewing.
- **Photography Tips:** Capturing the aurora from a moving ship requires specific techniques, such as using a wide-angle lens, high ISO settings, and a compact tripod to minimize motion blur.

**Additional Insights:**

1. **Solar Activity and Aurora Visibility:**  
The article mentions Solar Cycle 25, which began in December 2021, with a peak anticipated between 2024 and 2026. Increased solar activity during this period could lead to more vibrant auroral displays. Travelers planning trips during these years may have higher chances of witnessing intense Northern Lights.
2. **Equinox Advantage:**  
Auroral activity tends to be higher during the equinox months of September and March. This phenomenon, known as the Russell-McPherron effect, results from the alignment of Earth's magnetic field with the solar wind, enhancing geomagnetic activity. Planning trips around the equinoxes could increase the likelihood of observing the aurora.

**Cruise Amenities:**  
Many Northern Lights cruises are equipped with open-top viewing decks and heated indoor lounges, ensuring comfort during cold nights. Some operators also provide warm overalls and offer complimentary re-booking if the lights are not sighted, demonstrating a commitment to passenger satisfaction.

**Photography Challenges:**  
Photographing the aurora from a moving ship presents challenges due to the vessel's motion. To counteract this, photographers should use fast shutter speeds, high ISO settings, and wide apertures. Utilizing image stabilization features and shooting during calmer sea conditions can also help reduce motion blur.

**Alternative Viewing Options:**  
While cruises offer unique advantages, land-based tours in Iceland also provide excellent opportunities for aurora viewing. Locations like Þingvellir National Park, Jökulsárlón Glacier Lagoon, and the Snaresund Peninsula are renowned for their dark skies and stunning landscapes, serving as excellent vantage points for Northern Lights photography.

Ultimately, embarking on a Northern Lights cruise in Iceland offers a distinctive and potentially rewarding experience for aurora enthusiasts and photographers. By understanding the optimal viewing times, leveraging the advantages of sea-based observation, and employing appropriate photography techniques, travelers can enhance their chances of capturing the mesmerizing dance of the aurora borealis.

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# Problematic AI videos

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News

## That white guy who can't get a job at Tim Hortons? He's AI

TikTok removes racially charged videos, made with latest version of Google's Veo

David Michael Lamb, Ashley Fraser, Andrew Kitchen · CBC News ·  
Posted Jul 09, 2025 4:00 AM EDT | Last Updated: 4 hours ago



That white guy who can't get a job at Tim Hortons? He's AI

4 hours ago | 3:26

'Josh' was an AI avatar covertly marketing on TikTok for a company that works with recruiting firms. Some of the videos were racially charged. CBC's Visual Investigations team tracked down his creators to get some answers.

## Videos posted to TikTok

- white man in 20s complaining how difficult it is to get a job in Canada
- makes **racially charged statements about immigrants** and their role in the job market

## Created **using AI** by Nexa

- develops software other companies can use to recruit new hires



<https://www.cbc.ca/news/ai-generated-fake-marketing-1.7578772>

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AI | NEWS

## AI teddy bear for kids responds with sexual content and advice about weapons

Posted: November 21, 2025 by Pieter Arntz

FoloToy's AI teddy bear  
Jumped from friendly chat to sexual topics & unsafe household advice

- graphic sexual concepts
  - including BDSM-related topics
- probed for personal details
- offered advice about dangerous objects in home

- FoloToy suspended sales of AI-enabled toys
- OpenAI revoked FolyToy access for policy violations
- plenty of AI toys remain unregulated
  - risks aren't limited to one product



<https://www.malwarebytes.com/blog/news/2025/11/ai-teddy-bear-for-kids-responds-with-sexual-content-and-advice-about-weapons>



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# News on AI

## ■ AI News

- document updated frequently with news items about AI
- not intended to be all encompassing
  - simply contains links to AI news I thought was “interesting”
- document *may* be updated frequently and has the latest news at the top

■ <https://opcug.ca/opl/ai-news.pdf>