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# Screen Sense

Science 

120 min 



Intel® Core™ processors

# Overview

- Explore the science behind eye strain and its effects on the body.
- Understand the impact of prolonged screen time on physical health.
- Exploring principles for creating a healthier digital workspace.
- Monitor screen time and screen distance using Jupyter Notebook or Google Colab.
- Create a public awareness poster to promote healthy screen habits and their benefits.

# Your Daily Screen Time

How many hours do you usually spend in front of a laptop or computer screen daily without breaks?

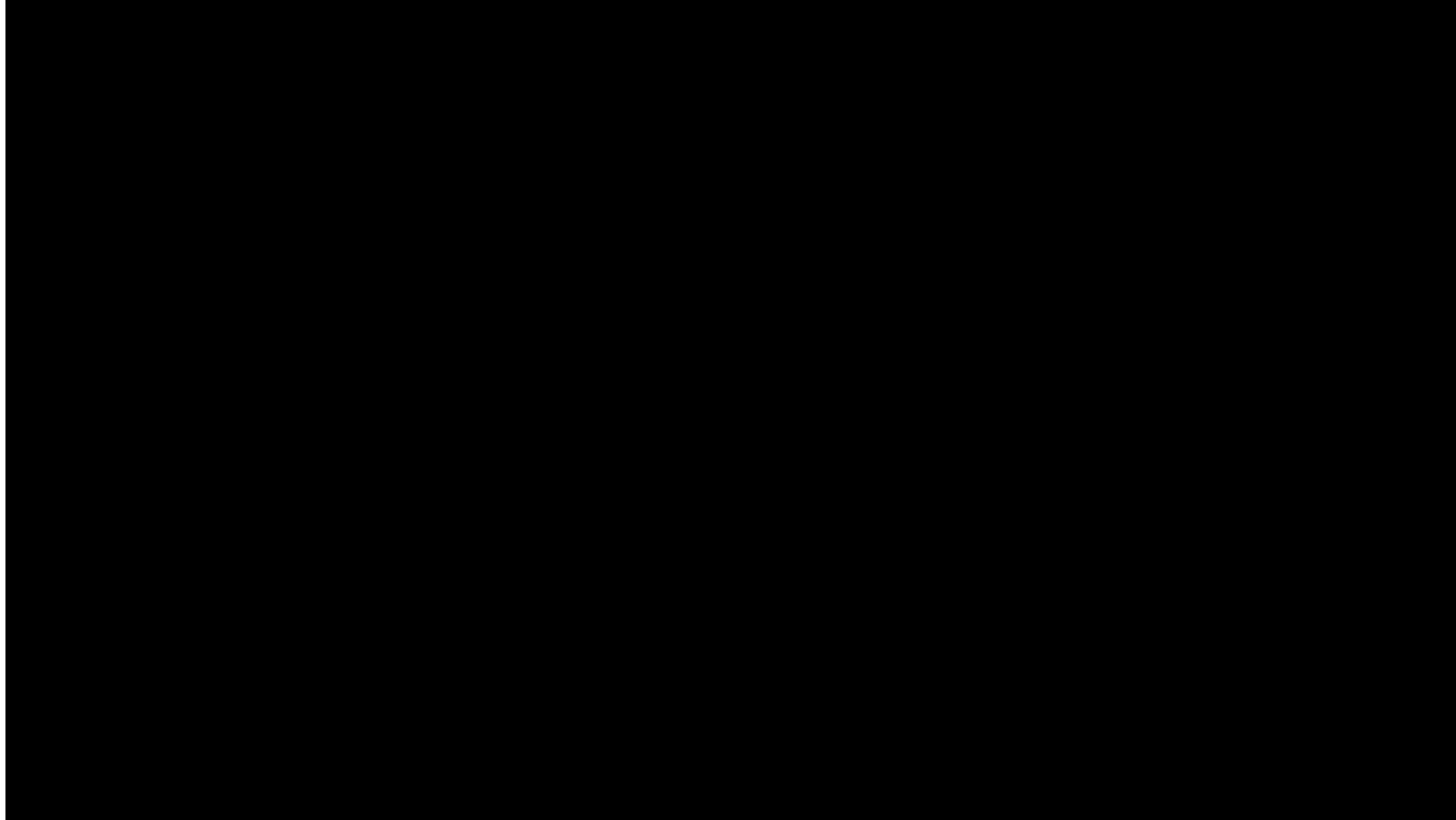
- A. 1-2 hours
- B. 3-4 hours
- C. 5-6 hours
- D. More than 6 hours



How do you feel after using a computer or laptop for a long time without taking breaks?

Source:

# The Impact of Prolonged Screen Time



Source: <https://www.youtube.com/watch?v=k06Cjilts94>

# What Problems Did We Identify?

- What do the person's facial expressions and movements tell us about how they might be feeling?
- As the video progressed, did you notice any changes in how the person interacted with the screen?
- Have you ever felt the same way after spending a long time in front of a screen?



# Problems from Prolonged Screen Time

- Eye strain
- Headaches
- Neck and back pain
- General body discomfort

Have you noticed any of these issues when you've used a computer for a long time? What might be some reasons for that?





Let's explore the problem



# Exploring Eye Strain

- You will explore how screen distance affects your eyes by doing an activity.
- In this activity, you will measure different distances from your screen and see how comfortable you are reading the text on the next slide.

Refer to Worksheet - 1 for detailed guidelines.



# Exploring Eye Strain

- Using the measuring tape, position yourself at 30 cm, 60 cm, and 90 cm from the screen. Read the text in an article at each distance.

## Digital Shift



*In recent years, the way we work and learn has changed a lot because of new technologies. Digital tools like computers, tablets, and online platforms have made accessing information and communicating from anywhere more accessible. These technologies have opened up new opportunities for learning and working, allowing us to collaborate with people far away and learn new things in interactive ways.*

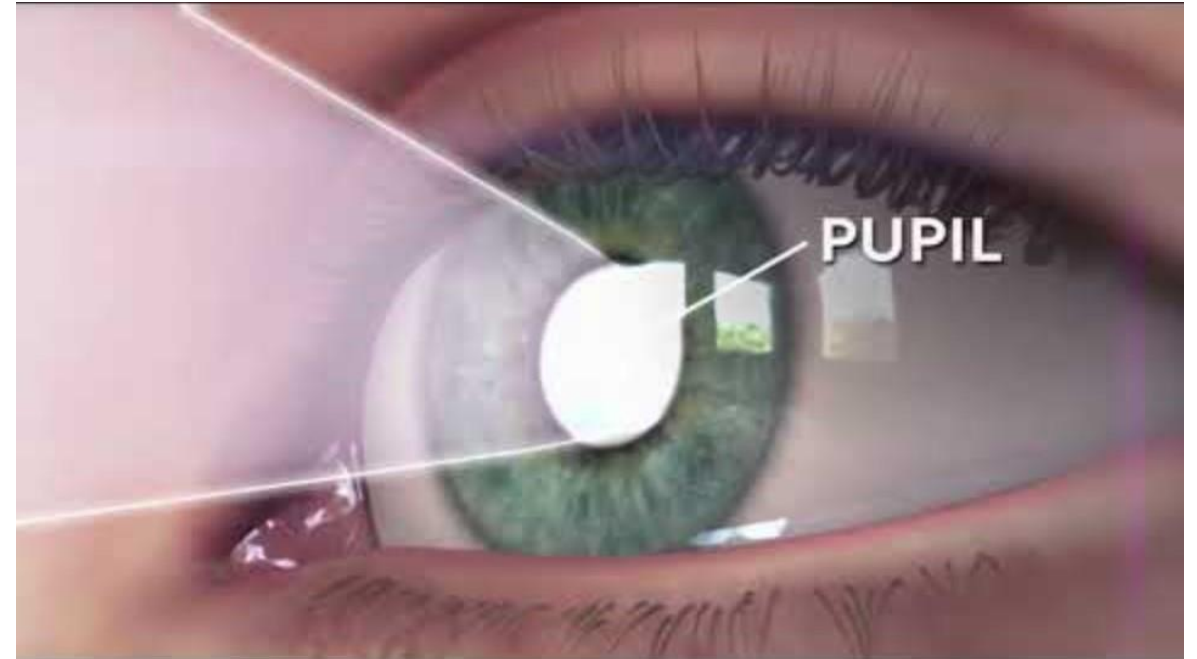
*However, spending long hours in front of screens can also lead to problems. Prolonged sitting while using these devices might cause eye strain, headaches, and discomfort in the neck and back. It's essential to be aware of these issues and find ways to manage them so that they stay comfortable and healthy.*

# Exploring Eye Strain

At which distance did you feel most comfortable reading the text? Why do you think this distance felt the best?

# Internal Structure of the Eye

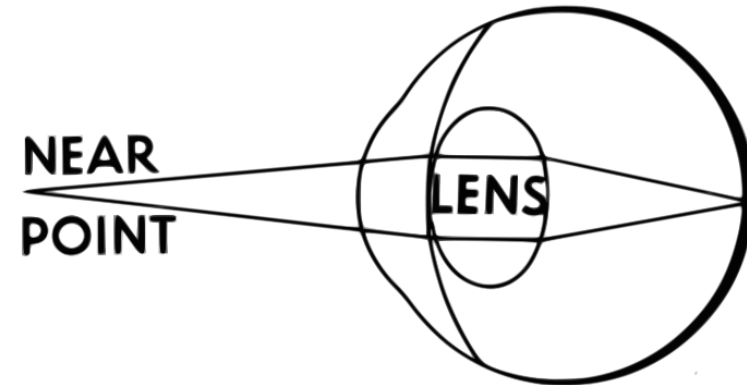
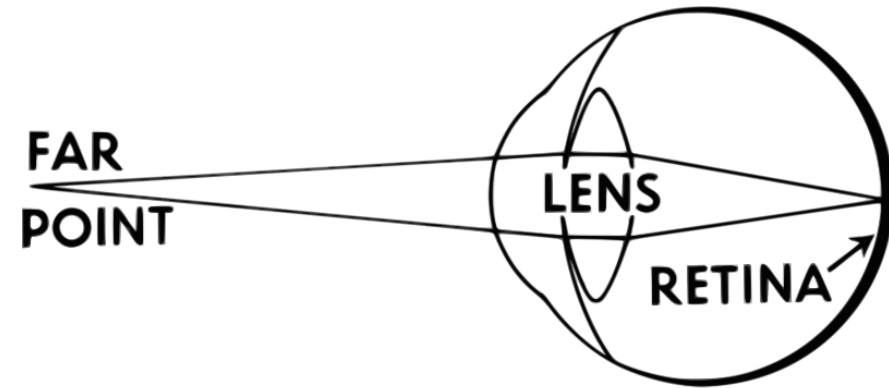
- **Light Entry:** Light enters the eye through the pupil, the small opening in the center of the iris (the black-colored part of your eye).
- **Lens Focus:** The lens behind the pupil focuses the light onto the retina at the back of the eye.
- **Image Formation:** The retina converts the light into signals that are sent to the brain, where they are processed to create an image.



Source: <https://www.youtube.com/watch?v=FICG2Z9bnTM>

# How Distance Affects Eye Strain

- Your eye's lens adjusts to focus on objects at different distances. If the screen is too close or far, it causes extra strain and makes it hard to see clearly.
- Overworking the lens can lead to eye strain, headaches, and blurry vision.



Source: [https://en.wikipedia.org/wiki/Accommodation\\_%28vertebrate\\_eye%29#/media/File:Accommodation\\_\(PSF\).svg](https://en.wikipedia.org/wiki/Accommodation_%28vertebrate_eye%29#/media/File:Accommodation_(PSF).svg)



# How to Reduce Eye Strain

- **Optimal Distance:** As we found in our activity, a reading distance of 60 cm was most comfortable. This is in line with the ideal distance (arm length) of 45-70 cm from the screen, which is crucial for your comfort and health.
- To reduce eye strain, take breaks every 30 minutes to keep your eyes healthy and focused.



# Exploring Physical Discomfort

- Look at these three images: which posture feels most comfortable?
- Why do you think that posture is better than the others?



# Exploring Physical Discomfort

- Here are three images showing the spine position at different distances.
- Which position offers the least stress on the spine?





# Exploring Physical Discomfort

- Sitting too close or too far can strain your spine and muscles.
- Maintaining a distance of 45 to 70 cm from the screen helps to keep your spine straight.
- Maintaining this correct posture reduces strain on the spine and neck and keeps your body comfortable.



# Solutions

- Solutions we've discovered to reduce the impact of prolonged screen time:
  - Maintain an optimal distance (45-70 cm).
  - Take regular breaks, ideally every 30 minutes.
  - Keep a correct posture.



# Solutions

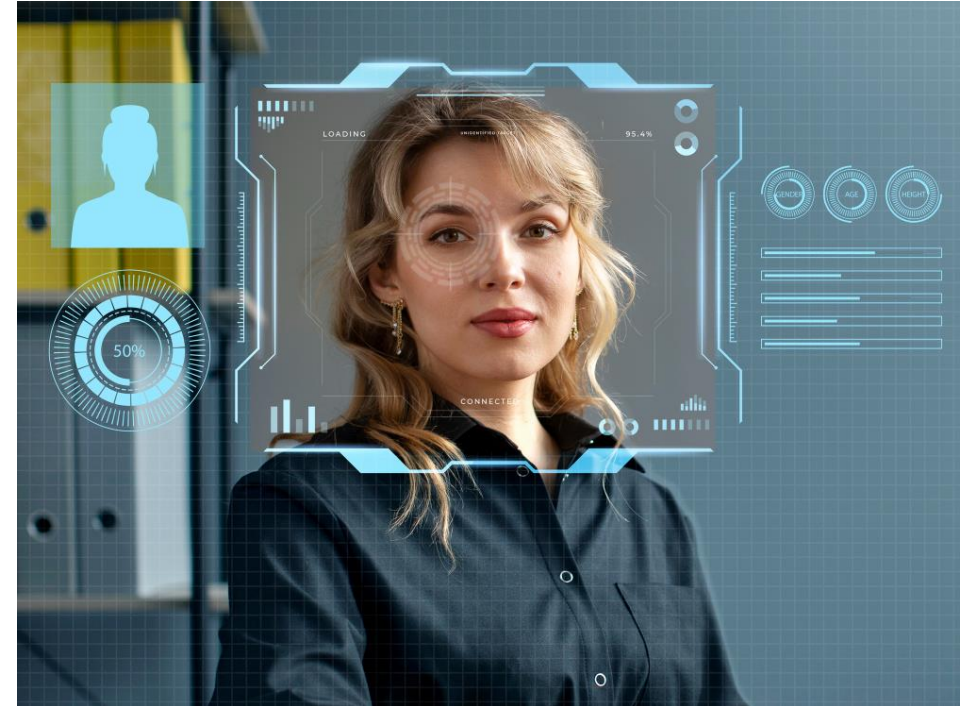
Maintaining screen distance and taking breaks are essential, but applying them consistently is challenging.

- Can we use technology to make following these solutions more accessible and more automatic?
- Which technology can help us remember to maintain a healthy screen distance and take breaks?



# Solutions - Computer Vision

- We need technology to remind us about screen distance and breaks.
- The solution is Computer Vision Technology.
- Computer vision is a technology that allows computers to "see" and understand images and videos.





# Your Mission: Promote Healthy Screen Habits

# Mission overview



Step 1: Hands-On  
Practice



Step 2: Create a poster  
to raise awareness about  
healthy screen habits



# Step 1: Hands on Practice

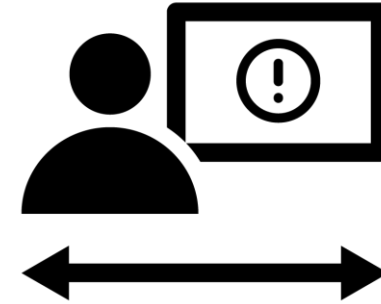
# Tech Solutions to Support Healthy Screen Habits

Let's explore how CV technology can help us follow the solutions we learned.



**Break Reminder**

An Application that prompts you to take regular breaks to reduce eye strain.



**Screen Distance Reminder**

An Application that alerts you if you're too close or far from your screen



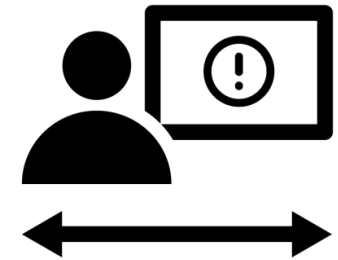
# Explore and Customize Your Code

- Follow the Screen Sense Installation Guide in your platform's working folder:
  - Windows users: Use the guide in `working_folder_windows`.
  - Chromebook users: Use the guide in `working_folder_chromebook`.
- Upload and run the code to track screen time and distance.
- Adjust variables like alert timings and screen distance to be detected and customize the alert's color and font.
- After running the code, take a moment to think and answer the questions directly in the corresponding cells of the Jupyter Notebook or Google Colab.

Refer to Installation guide in respective working folders.



**Break Reminder**



**Screen Distance  
Reminder**

# Connecting Practice to Real Solutions

- You've learned how to track screen time and measure screen distance with CV technology using Python code.
- Now, let's see how Acer's User Sensing technology applies these real-life solutions to support healthy screen habits.

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# Connecting Practice to Real Solutions


- **Acer Break Reminder** integrates with your screen time management.
- Customize break intervals from 20 to 120 minutes.
- Alerts with notifications and sounds help you take breaks and reduce eye strain.



# Connecting Practice to Real Solutions

- **Acer Screen Distance Reminder** helps to maintain the ideal screen distance.
- Set distance limits and receive alerts if you're too close or too far.





## Step 2: Create a Poster to Encourage Healthy Screen Habits

# Create a Healthy Screen Habits Poster

Design a poster to promote healthy screen habits.

- **Use Canva:** Open Canva and choose a poster template.
- **Add Key Points:** Optimal screen distance, regular breaks, proper posture.
- **Design Tips:** Make it visually appealing and easy to read.

Refer to Worksheet - 2 for detailed guidelines.





Let's reflect and share

# Reflect and Discuss

- What personal changes do you plan to make in your screen habits based on what you've learned?
- What design choices did you make for your poster to make it engaging and informative?





# Summary

- Learned about the effects of prolonged sitting and strategies for managing them.
- Used Python code in Jupyter Notebook (on Windows) or Google Colab (on Chromebooks) to monitor screen time and maintain screen distance.
- Explored Acer user sensing features, including break reminders and distance measurement.
- Created a poster to promote healthy screen habits and their benefits.



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