

In-Class Exercise 09 – Video Calculations & Hardware

Topics: Video calculations and hardware

Summary:

Streaming is a critically important aspect of today's audio and video media consumption, the reasons for which we discussed in class. This assignment builds on the calculations we're studying as part of the video unit.

Reminders:

- Please call on the instructor if you need help. You are also welcome and encouraged to confer with your classmates if the instructor is busy helping somebody else.
- You are welcome to take breaks at your discretion while working on this assignment. However, you are not allowed to leave for the day until the class period has ended or you have completed the assignment and turned it in.

Please read each step carefully before completing it. Be sure to follow the rules of proper spelling, grammar, capitalization, punctuation, and sentence structure in your write-up.

NOTE: Remember NOT to copy or paraphrase definitions from the web.

Instructions:

1. Open up the Word template and save it as **LastnameFirstname_ICE09**.
2. Obtain a copy of the video file you submitted for In-Class Exercise 08 (the iMovie/WMM exercise). If you don't have a local copy already, you can download your submitted files from D2L.
3. In your Word file, list the size of your video file. You may use your choice of MB or KB.
4. Your video file is compressed. Calculate the **uncompressed** file size of your video file. Show your calculations. Your answer should be MUCH larger than your answer in the previous step. For an accurate comparison, be sure your file size units are the same as those in the previous step. (**HINT:** Use MediaInfo on your computer to get the video file's frame rate and frame width and height.)
5. Go to Speedtest.net (<http://www.speedtest.net/>) and use it to determine your current network speed.
6. In your Word file, record your **download** speed (I don't want upload speed). Convert it to Mbps if Speedtest.net does not already give it to you in that unit.
7. Calculate the following, showing your calculations for each one:
 - a. What is the bit rate of your **compressed** video file? Show your calculations (including the conversion of your file size to bits) and convert your answer to Mbps.
 - b. What is the bit rate of your **uncompressed** video file? Show your calculations (including the conversion of your file size to bits) and convert your answer to Mbps.
8. Answer the following questions. (**HINT:** You may want to use your answers to questions 5 and 7 to answer this one.)
 - a. Could you stream your **compressed** video file on your current network? Why or why not?
 - b. Could you stream your **uncompressed** video file on your current network? Why or why not?

9. Go to Newegg's TV section (<http://www.newegg.com/Televisions/Category/ID-264?name=Televisions>) and find a TV of your choice that's currently on sale. Answer the following questions about this TV:
- What is the name of this TV? Be sure to include the entire name as listed on the Newegg page.
 - What is the URL of the Newegg webpage with this TV's specifications?
 - What is the TV's resolution (width and height in pixels)?
 - Assume your TV has a 16:9 aspect ratio. Calculate the resolution width of this TV given the resolution height and aspect ratio. Show your calculations. Verify that it is the same width that you gave in part c.
 - Is the TV progressive or interlaced? (NOTE: 4K TVs are progressive.)
 - Explain the difference between progressive and interlaced.
 - What is the TV's refresh rate (sometimes called motion rate)? Be sure to use the correct units.
 - Is the refresh rate fast enough to accommodate both film and television frame rates in the US? Why or why not? Show your calculations as part of your answer. (**NOTE:** If you can't find the refresh rate in the Newegg specifications, try doing a Google search using the TV's model number.)
 - How many HDMI ports does the TV have?
 - Why are HDMI ports useful?
 - Is the TV 3D? Explain what a 3D TV is.
 - Is the TV 4K? Explain what a 4K TV is.
 - Is the TV OLED? Explain what an OLED TV is and what advantages it offers.
 - Is the TV a Smart TV? Explain what a Smart TV is.
 - Is the TV curved? Explain what a curved TV is and what advantages it offers.

10. Save your file again and submit it on D2L.

Criteria:

Step	Points	Reason
9e	4	Progressive or interlaced?
3	4	List the size of your file LastnameFirstname_ICE08.mp4.
4	6	Calculate uncompressed file size, and show calculations
6	6	Download speed
7a	6	Bit rate of compressed file, with calculations
7b	6	Bit rate of uncompressed file, with calculations
8a	6	Could you stream your compressed file on your current network? Why or why not?
8b	6	Could you stream your uncompressed file on your current network? Why or why not?
9a	4	TV name
9b	4	URL
9c	4	TV resolution?
9d	4	Show how to determine width from height/aspect ratio
9f	4	Explain the difference between progressive and interlaced
9g	4	Refresh rate?
9h	4	Is the refresh rate fast enough for both film and TV? Why or why not?
9i	4	How many HDMI ports?
9j	4	Why are HDMI ports useful?
9k	4	3D? Explain what 3D is.
9l	4	4K? Explain what 4K is.
9m	4	OLED? Explain what OLED is.
9n	4	Smart TV? Explain what a Smart TV is.
9o	4	Curved? Explain what a curved TV is.