Table of Contents

What is wrong with the 2023 League worlds opening ceremony?

The original league worlds opening ceremony video from this year has very many technical quirks. Here is what I noticed and spent a a few (prolly a dozen) hours fixing.

- The audio on the YouTube upload is unexplicably in mono and sounds notably worse than the Twitch livestream which was in stereo.
- Likely destructive interference when collapsing stereo to mono?
- The whole 'scripted' section of the opening is actually running at 29.97 fps, and interpolated to 60 but in the worst way.
- Half of their cameras are running at 29.97 which means every frame is duplicated for the stream which is 59.94 - this on it's own is fine. Most of the side-angle cameras are 29.97.
- The other half of the cameras are also running at 29.97, but are interpolated to 59.94 THROUGH FRAME BLENDING?!?
- This means that every other frame is literally a 50/50 blend of the two frames before it. This is what causes that motion-blur like feel, and you can instantly tell which cameras they are on.
- It might be the cameras that also do AR are doing blending? unsure.
- In fact, the main stage camera and the cable cam blend on opposite frames - eg: one has good even frames, blended off, the other is vice versa. This might be because of an internal delay? I'm not sure. Don't get me wrong 1080p29.97 is fine, although odd since sports is usually 720p60 or 1080i60.
- The version on YouTube took a video that had TV black levels, mapped it to PC, then was converted to TV again, resulting in crushed black and white levels losing detail
- The version on Twitch has the audio and video about 100 ms out of sync, this is most noticeable with the fireworks at the end of gods not being in line with music. Interestingly, the audio and video ARE synced correctly on YouTube version.
- TV (and most video formats) uses 16-235 to express black-white instead of 0-255, whereas PC is 0-255. So, if you take a 16-235 feed, map it to 0-255, then crop it into 16-235 again, you effectively increase contrast and reduce your dynamic range, that is what seems to have happened on YouTube.
- Another odd quirk: some of the camera angles are different between the YT and Twitch versions? Either these were cut after the fact, or it was filmed weird? Not sure, I can upload a side by side comparison if anyone is curious. Notable on some audience and a few side angle shots.
- Also if you watch the side by side, depending on if you sync up the video or audio feeds, it almost looks like there are 2 video systems, and depending on which you sync up on, some transitions happen 100 ms before or after the other, with the other half being synced. I think the AR stuff is probably separate?
- About that frame blending, there are 4k60 audience camera recordings on YouTube, and if you watch those carefully, you'll notice the camera feed going to the video walls also does frame blending. This tells me that whatever system video was going into first was doing the blended frames, but again, only on half of the cameras.

So, to fix this

- I took the stream from Twitch, split the audio and video. For the video, I couldn't simply drop all odd or even frames because their different cameras interpolate different sets of frames.
- From my cut, the "main" stage camera had odd frames correct, and even frames blended, and the cable cam that is further away ad all even frames correct and odd frames blended.
- So I spent 3 hours clipping each camera angle, and dropping either the odd or even frames accordingly.
- I then re-synced the audio with that 100ms offset. This left me with a 29.97 fps video. That is my "cleaned up" version that I might upload, but, since the original was 60 fps, I wanted to interpolate it, but properly, not through frame blending.
- So I ran the whole thing through an AI video interpolation tool overnight on my GPU, and there you have it, 4k60 (technically 59.94). I'll add the 29.97 maybe as well.

Stuff I did not fix:

- The yellow jacket intro video is filmed in 24 fps, and brought up to 30, but not in a very consistent way, so it's staying as is.
- I can't change mic volumes, there isn't a lot, but you can pretty easily tell which parts are lip-synced anyway (listen for the reverb different, or when vocals sounds like they are stereo - eg: first 10s of vocals in gods sounds live, most of the rest is off the tape).
- I also can't fix their broken shadows on their AR characters.

Note: I do not own the music or video, those are from Riot Games. I'm simply uploading this in case anyone else wanted to watch it without the bizarre quirks of the version on YouTube.

If anyone from the Riot Games technical team is watching, I'm genuinely curious about how their production setup works and I would love to chat. (Or if you know someone who works with the technical team)

This is not meant to be a dunk on the performance, overall it was well put together, these are just 'quirks' I saw and couldn't unsee.

Here is the fixed version
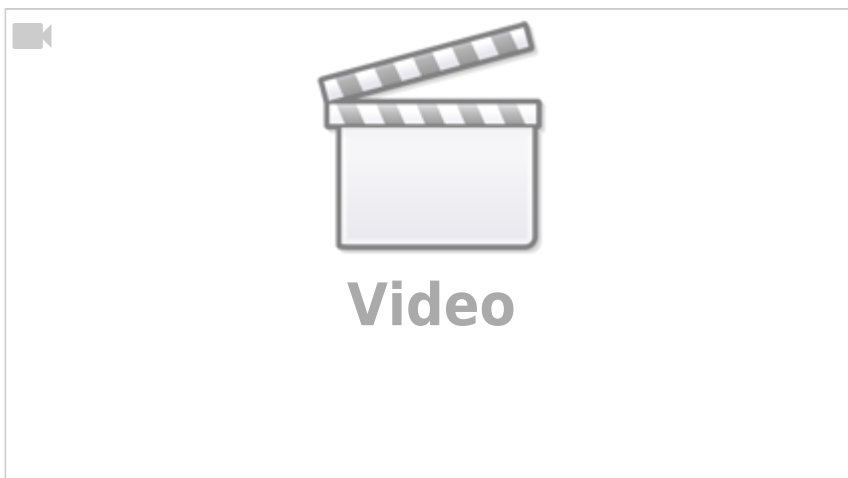
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Last update: **2023-12-20 07:39**