# Science Sketch Manual

Brought to you by iGEM NYU Abu Dhabi 2018

- **Sketching:**

1. Select a topic for the sketch! It can be either about your project or any major techniques/principles that your team is using.
2. Create a script of about 200-250 words (which will give you a video of about 1.5-2.5 minutes at the end).
3. Separate the script into various storyboards. The simplest way to do this is to group 1-2 adjacent and relevant sentences into the same storyboard.
4. Start designing each of your storyboards! Let your creative mind flow and draw out anything in your head! Not knowing where to start? Google is always your best friend! Take one of the storyboards for our sketch about iGEM as an example: *In the fall, teams from all around the world travel to Boston to present their project and compete at the Giant Jamboree.*


5. Set up a camera (it is easier if you can get a tripod that can film tilted or downwards, and a shorter tripod is easier to use than a tall one), find a place with good lighting (Natural light works quite well) and dive right into the fun!
6. When filming, make sure to focus properly. If the camera focuses automatically, it might become blurry as the hand moves around. Focusing manually might be better as the focus doesn't change while filming.

7. Different storyboards can be filmed individually and they can be combined when editing. It is ideal to find a buddy that can monitor the camera for you when you are sketching to ensure that the camera is working/focusing properly!
8. Use A3 papers for sketching so that you have more space and that the corners of the paper won't be included in the clips. Don't forget to ask your buddy to mark the filming frame for you on the paper so you know where to/not to draw (it is alright to use pencil to slightly mark the four corners; it won't be that noticeable in the video).
9. Make sure to be careful while drawing. Try not to shift the paper too much while drawing.
10. Use a lot of colors to make it colorful and fun!
11. Don't stress out and take your time when you are sketching! If you feel that you need to stop and think, just move your hand out of the filming frame while keeping the camera recording. These short periods can be edited our later!
12. Don't forget to record the soundtrack that will be used later when editing! Any recording app on your smartphone will do. Speak slowly and clearly, and make sure to pause in between sentences.
13. Voila! You are done! Science sketch is fun and easy!

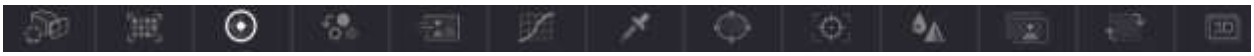
- **Editing:**
  You can use almost any film editing software. We used DaVinci Resolve which is available online for free at https://www.blackmagicdesign.com/products/davinciresolve/
  If you choose to use Resolve, here's a guide on how to edit your science sketch:

  - Start a new project
  - Import all the media you need using the import tool in Resolve
  - Drag your media into your timeline:
    - Start off by dragging your audio files like the voiceover and any background music
    - Then, start dragging the first video file into the timeline
    - Delete the audio file associated with the video files every time you add them to the timeline to make sure you can only hear the voiceover /any background music.
  - Split the audio clips into different parts that will correspond to different video clips using the splitting tool

  - Right click on the video clip, and click "change clip speed"
  - Keep increasing the speed until it fits the length of the corresponding audio segment
  - Add the next video file and repeat the above process
  - To rotate the video clips and whiten up the paper/whiteboard you used there are advanced ways to colour grade on Resolve, but here are some tricks that are just as good:

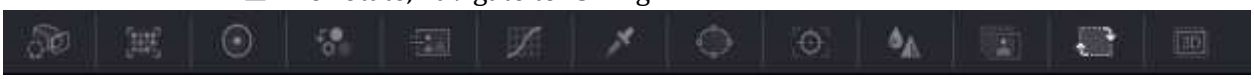
- Go to “Colour” in the bottom of the window:


- Go to “Colour Wheels”



- Navigate to “Gain” and select the small white point picker

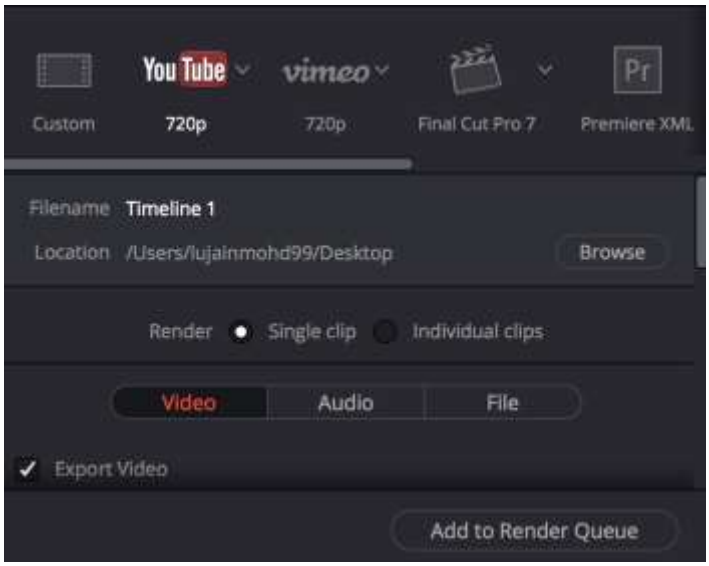

- Take the picker to your timeline and click on any area in the paper that is supposed to be white- it will automatically whiten up the whole paper.
- To rotate, navigate to “Sizing”



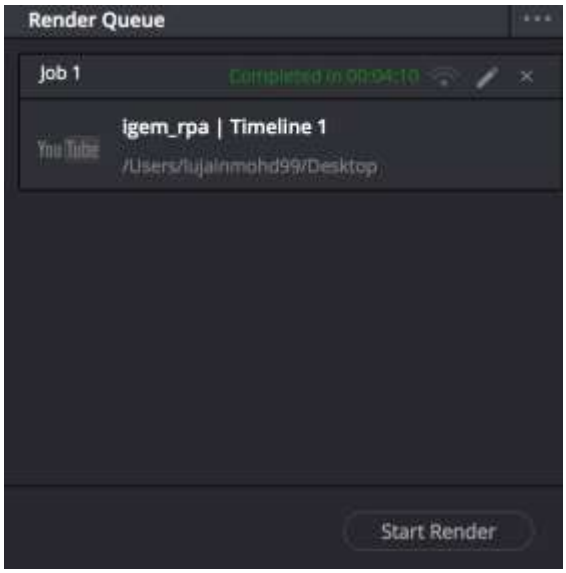
- Go to “Rotate” and type in 180

○ After you’re done with the video, to download the it, go to “Render” at the bottom of the screen:

- Click on “Youtube”, select “Single Clip”, choose your saving location, and click “Add to Render Queue”




- Go to the render queue on the right side of the screen and click “Start Render:




- The render time will vary depending on the length/effects/size of your clips. Sometimes it can take a long time, so if you see that happening, go grab a cup of coffee while your sketch renders!
- That’s it! When the render has been completed, your video will be saved in the location you selected.

**Some tips for using Davinci Resolve:**

- Using Resolve on your laptop will suck up a lot of its charge and will cause it to heat up and produce loud fan noises. Resolve needs a strong processor, so it might be a good idea to use it on a desktop, but using it on a laptop will still work!

- Always save your work regularly when using Resolve. Like any software, sometimes it crashes, and you don't want to lose all your hard work!

- Sometimes, if you're trying to watch videos you edited on your timeline, they might be choppy. This is because Resolve is not able to play all the edits you made on the clips in real time. To get rid of this, Go to "Playback" in the top toolbar, select "Render Cache", and select "User". Then, go to the clips on your timeline, right click on them, and select "Render Cache Colour Output". Wait until the red line that appears is completely blue, and then replay the clips. They will play smoothly in real time!