I have found the pipeline problem which I have described in report_1. It is because I didn't initialize the int **buf. When I use parallel_for, I defined class Panel to implement all the operations of the video by member functions. However, I dropped class Panel and used global functions for all operations when I use pipeline, because I worried about the variables in Panel would make conflicts with the variables I defined in main function. This is where my problem appears. In parallel_for, I initialized the int** buf in construction function, but I forgot to initialized it in pipeline.

I spend two days trying to debug. I used to edit my c++ file in Sublime Text, and I debug by scanning by my eyes… This works for my previous projects. However, this time I didn't find any bugs so I thought I need to use a IDE or gdb to help me. Then more problems appeared. My mac has version Mojave and it says on the stack_over_flow that gdb has some problems with this version. https://stackoverflow.com/questions/52529838/gdb-8-2-cant-recognized-executable-file-on-macos-mojave-10-14 Then I tried clion, eclipse and xcode, all of them were not convenient. Finally I thought I can use gdb in docker. Luckily it helps.

I have three filters in my pipeline. First one is used for flow control and producing new int** buf from the previous one. Second one is used for producing Mat based on int** buf. Third one is used for adding Mat to VideoWriter.