CS 229 : Project progress report

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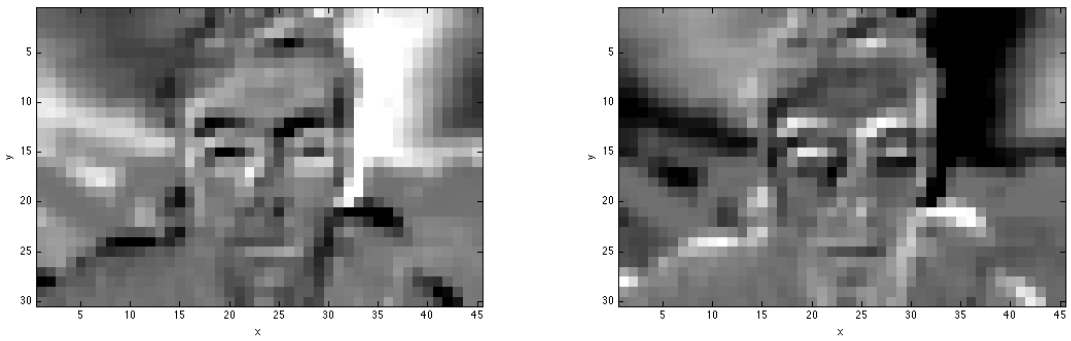
1 Getting started

It is the Eulerian Video Magnification (EVM) project that led us to think it was possible to extract pulse and oxygen saturation values from a video, we first set out to understand the details of the EVM process. The video can undergo different treatments depending on the goal, but the process to amplify changes can be summarized as:

- Separate the video into several spatial frequency bands.
- In each spatial frequency band, blur and downsample several times. The goal of the first step was to retain important spatial features when going through this second step (e.g. high frequencies such as edges).
- Amplify selected temporal frequency band.
- Recombine spatial frequencies, and add the result to the original video.

Figure 1 presents an example for the output of the next-to-last-step.



(a) At at a given time (b) Half a heartbeat period later

Figure 1: The EVM output, before recombining with the original video

What is striking is that the output for these two frames seem like they are the same image with inverted colors. In fact, after processing, the whole video presents a periodic color with a frequency that seems equal to the heartbeat.