Lab 6

Details on this week's assignment

To complete this course you must pass the exam and hand in a paper describing the work you did for this lab. Together with this paper you'll hand in your code (note: the code is for reference, no need to beautify your code) and some illustrative result videos and still images. **Instead of mailing multi-gigabyte video documents, you should put them somewhere in your web site (public_html) and mail the link to me**.

Note that the most important part is to implement the tracker in a correct way. After you made sure your implementation is correct, try the tracker on a video in a different domain (search on the internet to find a good video or create your own video). Keep in mind that when looking for a suitable video, the goal is not to show how good the tracker works, but try to put your finger on the strong and weak parts of the algorithm. After you analyzed these strong and weak points of the algorithm, try to come up with suggestions to improve your design. If there is still enough time, you can implement one or more of your suggestions and analyze the results (for instance, how does your improvement compare to the original algorithm with respect to the weak *as well as* the strong parts of the original algorithm). If you run out of time, you can describe how you *would* change the design and explain your expectations of this change.

The paper

As mentioned in the overview, you work in **groups of two**. The paper should be **at most 10 pages long** (but you can use double-column layout like scientific papers, if you need more room). This should be long enough to give a thorough description of your work, including introduction, conclusions and a discussion. In a paper-style report, the introduction would consist of a problem description (object tracking) and some related work (mention some approaches taken by other researchers, you can use the reader for this or look some up yourself). Then, give an outline of the approach that you have taken (mean-shift and color histograms). Describe the used algorithm and features in your own words. In the next sections, you can write about your implementation and the experimental results. Make sure to mention *all* relevant issues that you have done and why. For instance, make mention of your approach to color, which color model and why. When writing this part, **keep in mind that a reader should be able to reproduce your results by using the information in this report**. After that, give a detailed report of the results of your tracker, including graphs and screenshots. In the final section(s), you can give a discussion of your results, in which you can comment on the tracking results and introduce improvements that you have thought of. Furthermore, describe what the effects of your improvement are, or, for lack of time, describe what you expect the effects of the proposed improvements *would* be. Mention things like processing speed (and possible improvements), the handling of different domains (is one general solution possible, should the tracker be adapted for each domain, how will the adaptation be done, etc.). Don't forget to include your references at the end, and *cite your sources* in the text.

This might be a good time to start learning LaTeX, but MS Word is also acceptable. To be safe, it is best to hand in your report as PDF, since that should be readable on most machines (watch out for weird fonts, make sure they are embedded or don't use them). Again, **do not** mail the video documents, but put them on the web somewhere and mail the link.

The deadline for delivering your code and the report is 27 Dec. 23:59.