

# Computer Vision and Image Processing

## Final Projects

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Proposal Due Date: *November 3, 2017*

Final Project Due Date: *December 15, 2017*

For the final project, explore anything of interest to you related to computer vision. You may extend your own prior work as long as there is significant new content. You may work individually or in groups of up to three people. We will expect more from groups. Project ideas may be found on Introduction to Computer Vision course pages at other universities, such as here. You may also complete homework assignments of appropriate scale not covered in our class, such as this tracking assignment, with code here.

A report is required with your final projects. The report should be 5 - 8 pages (the upper limit of 8 pages is strict!) in CVPR format. You can download the CVPR template from here. It is important that you follow the format given above, to aid the final report reviewing and grading process.

Your final report should therefore be structured like a research paper, with the following sections:

- **Introduction:** The main purpose of this section is to describe the problem you are solving. In this section you might also discuss the nature and/or the purpose of the research, and the significance of the problem. Describe what you expect to discover or learn from this research.
- **Related work:** The related work section may also be called a literature review. The point of the section is to highlight work done by others that somehow ties in with your own work. It may be work that you're basing your work off of, or work that shows others attempts to solve the same problem. You do NOT need to mention absolutely everyone and every paper that may be even remotely related to the topic at hand. Rather, pick and choose only the important papers to discuss and try to provide a good amount of detail about what the paper is about. A few lines is usually adequate to explain the contributions of the work and how it relates to your own work. For this project, select about 4-10 papers that relate to the work.
- **Your approach/algorithm:** Explain in detail your approach, and specify any simplifications or assumptions you have taken. Also demonstrate the limitations of your approach. When doesn't it work? Why? Because your approach forms a large part of your credibility as a researcher and writer, it is imperative that you be clear about exactly what you did to get to the conclusions you got to in this research work. You want to walk your readers through your approach almost as if they were participating in it with you. What happened first? What happened next? How did you transition from one state to the next in your approach. If you deviate from the suggested instructions in a homework assignment (strongly encouraged), please make sure you specify/highlight what you did differently.
- **Experimental analysis & results:** This section is where you present the details of the experiments you performed. For example, if you tried running the labeling process using different classifiers, then you want to report all of the results of your research, both narrated for the readers in plain English and accompanied by any statistics you obtain. Graphs and tabulated results are strongly encouraged as they highlight your results visually. Be sure to describe the analysis you did. If you are using a non-conventional analysis, you also need to provide justification for why you are doing so. Avoid dumping numbers at your readers without providing a clear narration of what those numbers mean. A small result described and evaluated well will earn more credit than an ambitious result where no aspect was done well.

- Discussion and conclusions: This section is where you talk about what your results mean and where you wrap up the overall story you are telling. This is where you interpret your findings, evaluate your hypotheses or research questions, discuss unexpected results, and tie your findings to the previous literature (discussed first in your related work section). Your discussion section should move from specific to general. If there are differences between your results and the reported results in the literature, discuss why you think these differences exist and what they could mean. Briefly consider your study's limitations, but do not dwell on its flaws. Consider also what new questions your study raises, what questions your study was not able to answer, and what avenues future research could take in this area. Be accurate in describing the problem you tried to solve.
- References: Make sure to add references to all related work you reviewed or used, including web sites where you borrowed a technique or downloaded code to assist your work. References should be in standard IEEE format as indicated by the template files.
- You are allowed to submit any supplementary material that you think is important to evaluate your work, however we do not guarantee that we will review all of that material, and you should not assume that. The report should be self-contained.
- More advice on how to write a good technical paper can be found [here](#).

## 1 Proposal Submission

- Submit your project proposal via UBlearns as <YOUR\_PERSON\_NUMMBER>\_prj\_prop.pdf.
- *Late submissions are not allowed.*

## 2 Final Project Submission

- Submit your zipped file including your final report via UBlearns as <YOUR\_PERSON\_NUMMBER>\_prj.zip.
- Submit any supplementary material as a single zip file named <YOUR\_PERSON\_NUMMBER>\_suppl\_prj.zip. Add a README file describing the supplemental content.
- *Late submissions are not allowed.*