ECSE-626 Statistical Methods in Computer Vision

Course Project

Final Report Due: Friday, April 12, 2018

Submit your project electronically via mycourses. The report should be in either PDF or DOC format.

The course project involves finding an interesting algorithm or technique in the literature and implementing it and then, finally, testing it on a dataset. You can implement the algorithm however you want: Matlab, C-code, etc. The topic of the project must be related to a computer vision or medical imaging problem and must have some statistical/probabilistic aspect. In order to make sure that your chosen paper is appropriate, you are required to write a brief project proposal (1 page) summarizing the algorithm you chose, a justification of the choice, a specification of which part of the approach you plan to program yourself (and what code, if any, will be extracted from another source), and the experiments you plan to run. This proposal should be emailed to Professor Arbel through mycourses by Friday, Feb. 16, 2018.

By the end of the term, you are required to write a report summarizing the algorithm and the results of your implementation, as well as discussing the implications of your study. Make sure that you don't simply rephrase the text of the paper. Instead, provide an interpretation of the ideas presented in the paper in your own words. The report should outline the strengths and weaknesses of the algorithm presented, showing examples of these and presenting ideas for improving the approach.

Bonus marks will be given to those projects that extend the ideas presented in the paper (i.e. both in terms of the theory and in terms of results based on your implementation of the extension). Note that this is not required.

FORMAT:

Research results are often presented at a conference or workshop and published in proceedings of the conference. These proceedings consist of written reports about the material presented at the conference. Since there is usually a large number of presentations at these conferences, the length of the reports published in the proceedings is kept to a small number of pages, in this case **8 pages** (excluding references). As a researcher, you will need to gain experience in presenting your work in a condensed form. Thus, the report that you are to write for this course project will be required to meet the specifications of a paper published in the proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition (8 pages in length). Author guidelines for formatting and style for CVPR 2018 can be found here:

http://cvpr2018.thecvf.com/submission/main_conference/author_guidelines

GRADING SCHEME:

The project report will be assessed based on the components below:

- **Introduction: 10%**
- **Theory: 40%**
- **Results: 20%**
- **Discussion and Conclusions: 30%**

ACADEMIC INTEGRITY:

(1) Statement:

"McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/students/srr/honest/ for more information)."

"L'université McGill attache une haute importance à l'honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le site www.mcgill.ca/students/srr/honest/)."

(2) Common mistakes to avoid:

There are a few common mistakes made by students, which have, in the past, led to violations of the rules of academic integrity. A few of these mistakes are highlighted here in order to attempt to ensure that these mistakes are not repeated this semester:

- Missing quotations: When text is directly extracted from elsewhere, in this case from the paper in question or from other papers or websites, it is essential that you make sure to put the extracted text in quotations and that the paper/website in question is properly referenced. This rule applies to entire paragraphs or to a single sentence. If text is extracted from elsewhere but minor modifications are made (e.g. minor changes in wording), or paraphrasing is attempted, proper citations are still required in order to make it clear that the ideas are not your own but belong to someone else.

- Missing references for images or equations: When images are extracted from papers or websites, the source has to be made clear under the image. This is particularly important for this project as it needs to be clear that the image is not the result of the application of your implementation of the algorithm, but

rather the result of the application of someone else's algorithm or implementation (having been simply extracted and put in the report). Similarly, equations taken from elsewhere need to be properly cited.

- Missing references for code: The computer code (e.g. Matlab, C) should be developed entirely by the student. This is, of course, the point of the project. It is not acceptable to copy code from another student, the internet, or elsewhere, even if the variables are changed or minor changes are made to the ordering of the code. It is, however, possible that the paper that you choose has several components to it, and you may decide to implement only one component of the work. If other components are extracted from elsewhere, they MUST be properly cited and this must be made clear in the report.