**ENSF 619.2 – Final Project Description and Rubric**

The final project can be developed individually or in pairs. The individuals or pairs will be referred to as the “Team” from now on. The Team should choose a problem/topic of interest and try to solve it using image processing and/or deep learning methods similar or related to the ones described in class. The problem/topic of interest should represent a scientific challenge. It is recommended that the project involves the processing of images, but other applications will be accepted if related to the techniques learned in class. Ideally, the problem/topic of the project will align with the research interests of the Team. The final project corresponds to 50% of the course final grade. There are two components to the final project:

* Project report (60% of project grade)
* Project presentation (40% of project grade)

**Project Report**

*Report Format*

The project should be written using the following Overleaf template: <https://www.overleaf.com/read/ysprctrpygyg>, please make a copy for your team. The report is limited to up to 4 pages of technical content including figures and tables with one additional fifth page that may contain only references.

*Elements that need to be in the report:*

The report should contain the following information:

* Detail the motivation and significance of the problem being approached.
* Include relevant references (well cited, high impact factor journals, etc.).
* Describe and discuss the final methodology employed by the team to solve the problem.
* Present and discuss the results achieved by the team.
* Discuss strengths and limitations of the proposed methodology.

The final report should have the link to a GitHub repository with the code developed by the team during the project. The recommended sections’ structure of the project is:

* Abstract
* Introduction
* Related Work
* Materials and Methods
* Results and Discussion
* Conclusions
* References

The project report should be delivered by **December 7th, 2021 at noon**, Calgary time. The reports are graded by team and not by team member.

**Project Presentation**

The final presentation is a comprehensive eight-minute presentation with two minutes for questions. The presentation should touch on all points that are described in the final report. All team members should speak during the presentation preferably in a balanced manner. The presentation can be done in person or through Zoom. The final presentations will be split between the December 7th and 9th classes. The final presentations will be graded per student.

**Final Project Rubric**

Each of the components of the final project (report and presentation) will be given a score between 0 and 100 and will be weighted accordingly to obtain the final grade, which corresponds to 50% of the final grade.

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|  | **Bin A**  **(85-100)** | **Bin B**  **(70-84)** | **Bin C**  **(55-69)** | **Bin D**  **(0-54)** |
| Formatting Rules  (10 points) | - The written document fully adheres to the formatting rules (i.e., the Overleaf template).  - All references are formatted consistently across the document | - The written document adheres to most of the formatting rules  - Most references are formatted consistently across the document | - The written document adheres to some of the formatting rules  - Some references are formatted consistently across the document | - The written document does not follow most or any of the formatting rules  - Very few or no references are formatted properly across the document |
| Writing quality  (25 points) | - Extensive details and relevant examples.  - All information was accurate and delivered effectively.  - Terminology made the ideas in the report clear. | - Subject knowledge was evident.  - Included details and examples to answer the essential question.  - Used proper terminology and vocabulary. | - Information related to the topic, but report needed more details and examples to fully support ideas.  - Work showed little student interpretation.  - Used the wrong terminology to describe the topic | - Information did not include details or examples from reliable sources.  - Information was not sufficient to make successful argument.  – Used inappropriate terminology or vocabulary. |
| Methods  (25 points) | - Proposes to use appropriate methods for the problem at hand  - Proposes a sound experimental setup | - Proposes to use methods that could be appropriate for the problem at hand  -Proposes an experimental setup that seems correct | - Proposes to use methods that do not seem to be appropriate for the problem at hand  -Proposes an experimental setup that is not the most appropriate to assess the methods | - Proposes to use methods that are not appropriate for the problem at hand  -Proposes an experimental setup that is inconsistent |
| Results and Discussion   1. Points) | - The results are presented in a clear and effective manner  - The discussion is detailed and covers the methods strengths and limitations | - The results are presented mostly in a clear and effective manner  - The discussion is reasonably detailed and covers most of the methods strengths and limitations | - The results are presented somewhat in a clear and effective manner  - The discussion is somewhat detailed and covers most of the methods strengths and limitations | - The results are presented in a manner that is not clear nor effective manner  - The discussion is shallow or inexistent and covers little or no strengths and limitations of the methods |
| Quality of Figures and Tables  (10 points) | - The report makes use of tables and/or figures to clearly transmit ideas, concepts and results  - The figures have outstanding quality | - The report makes use of tables and/or figures to transmit ideas, concepts and results  - The figures have good quality | - The report makes use of tables and/or figures to transmit ideas, concepts and results, but these tables and/or figures can confuse the reader  - The figures have low quality | - The report does not make use of tables and/or figures |
| References  (10 points) | - All references are relevant to the work  - At least 12 references | - Most references are relevant to the work  - At least 10 references | - Some references are relevant to the work  - At least 8 references | - Very few or no references are relevant to the work  - Less than 8 references |

*Oral Presentation Assessment*

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|  | **Bin A**  **(85-100)** | **Bin B**  **(70-84)** | **Bin C**  **(55-69)** | **Bin D**  **(0-54)** |
| Quality of slides  (20 points) | - The slides are succinct and clear  - The slides make use of tables and/or figures to clearly transmit ideas, concepts and results  - The figures have outstanding quality | - The slides are mostly succinct and clear  - The slides make use of tables and/or figures to transmit ideas, concepts and results  - The figures have good quality | - The slides are somewhat succinct and clear  - The slides make use of tables and/or figures to transmit ideas, concepts and results, but these tables and/or figures can confuse the reader  - The figures have poor quality  - The figures have low quality | - The slides have too much text and are confusing  - The slides do not make use of tables and/or figures |
| Stays on Topic  Relevant to the topic  (20 points) | - Entire presentation  focused on the  topic.  - Able to answer audience questions without straying from  subject. | - Majority of presentation was on-topic.  - Made effort to return to topic when  presentation or  audience questions  strayed. | - Some material was  unrelated to the  topic, or presenter  used unrelated  material to pad the  presentation. | - More than half of  the presentation did  not directly address  the topic. |
| Relates to topic,  detailed, and accurate  (20 points) | - All content directly  related to the topic.  - Content was  thoroughly  developed and  demonstrated  detailed knowledge  of the topic.  - Opinions were supported by fact wherever possible. | - Content directly  related to the topic.  - Included many  details that  demonstrated  knowledge of the  topic.  - Most opinions  were supported by  facts. | - Had difficulty  explaining how the  content and topic  relate.  - Many opinions were not factually supported. | - Presentation did not  relate to topic.  - Included few details  and relied heavily  upon unsupported  opinion. |
| Vocabulary  Appropriate word  choice  (20 points) | - Vocabulary was  outstanding.  - Word choice was  professional but not  artificial.  - Smoothly  incorporated topic-specific vocabulary. | - Consistently used a  scholarly vocabulary.  - Successfully used  topic-specific  vocabulary.  - Did not use any  Inappropriate language. | - Vocabulary was too  casual.  - Attempted  to use topic-specific  vocabulary.  - May have used  inappropriate  language on one occasion.  - Misused words in an effort to seem scholarly. | - Did not speak in a  scholarly or professional manner. - Used little or no topic-specific vocabulary.  - Used inappropriate  language two or  more times. |
| Knowledge  Demonstrate knowledge of subject  (20 points) | - Demonstrated a  thorough knowledge  of the subject matter. - Able to use audience questions to further demonstrate understanding of the topic.  - Appeared to be an expert on the subject being presented. | - Demonstrated a  working knowledge  of the subject matter. - Able to satisfactorily answer audience questions and provided additional  information upon  request. | - Demonstrated a  basic knowledge of  the subject matter.  - Able to address audience questions by repeating parts of the presentation - did not provide any additional information. | - Demonstrated little  or no knowledge of  the subject.  - Unable to answer audience questions or comment further on any part of the presentation. |