



## Tutorial Creation Assignment

The goal of this assignment is for you/your team to develop a machine learning tutorial **that uses PyTorch** to solve an interesting deep learning problem using techniques relevant to our deep learning course. Once your team decides on a topic for the tutorial, please contact the instructor of the course or one of the TAs to get approval for your tutorial topic. For reference, the tutorial should have similar complexity or be more complex than the tutorials provided in the course GitHub page.

Some topic suggestions are:

- Implementing a domain adaptation method and evaluate it in a real problem
- Implementing a generative model to create synthetic data
- Implement an auto-encoder for anomaly detection
- Implement a self-supervised learning technique and show how it can be used to improve performance of deep learning models

The deliverables for this assignment are:

- A jupyter-notebook containing your tutorial. All the code should be inside a single-jupyter-notebook file.
- Attachments as appropriate (e.g., figures, etc.)
- Link to download the data used in the tutorial, if appropriate.

The assignment should be delivered at the deadline established in class using the appropriate D2L dropbox folder. The tutorial will be given a score between 0 and 100 and will be weighted accordingly to obtain the final grade.

### Rubric

| Category             | Exceeds Expectations (85-100)   | Meets Expectations (75-84)  | Needs Improvement (65-74)  | Below Expectations (0-64)   |
|----------------------|---|---|--|---|
| Code Execution (25%) | The program works as expected with no error messages and no warnings.<br><br>The processing time is appropriate | The program works as expected with no error messages, but a few warnings. | The program has a few errors and maybe a few warnings, but the errors are easy to fix. | The program has multiple error messages, which are not easy to fix. |

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|  | for the problem complexity.   | The processing times is a little high for the problem complexity;   | The processing times are very high for the problem complexity.   | The processing times are extremely high for the problem complexity.  |
| Clarity of the code (25%)                          | The code is clear and has pertinent comments  | The code is somewhat clear and has some comments  | Most of the code is not clear and has very few comments  | The code is unclear and has no comments.   |
| Proper usage of the techniques seen in class (50%) | <ul style="list-style-type: none"> <li>- Uses appropriate methods for the problem at hand</li> <li>- Uses a sound experimental setup</li> </ul> | <ul style="list-style-type: none"> <li>- Uses methods that could be appropriate for the problem at hand</li> <li>- Uses an experimental setup that seems correct</li> </ul> | <ul style="list-style-type: none"> <li>Uses methods that do not seem to be appropriate for the problem at hand</li> <li>- Uses an experimental setup that is not the most appropriate to assess the methods</li> </ul> | <ul style="list-style-type: none"> <li>- Uses methods that are not appropriate for the problem at hand</li> <li>- Uses an experimental setup that is inconsistent</li> </ul> |