**Competition Project Guidelines**

You can find the specific topic assigned to you in Moodle. This project will be split up into two phases: (ProjC1) Collaboration Portion, and (ProjC2) Competition Portion. In the collaborative portion, teams are welcome to use deep learning or more classical approaches (i.e., extracting hand-crafted features and using classical methods such as Support Vector Machines and Random Forest). You will prepare a report that will be shared with everyone in the class. You will be able to test your performance against a test set that we will keep hidden from you. Your grade will not be impacted by a low performance in this portion of the project. In the competition portion, you will have to use some deep learning methodology for your task. If you started with a classical approach you are welcome to create a hybrid approach (e.g., combining hand-crafted features and data-driven features) if you want to build on your prior work. There will be a scale set for your grades based on performance on the test set, and the top teams from each project topic will be given extra credit. You will be given a few chances to submit your predictions using a scoreboard to determine who well your team is performing against others.

**ProjC1 - Deliverables [30%]:**

You will be turning in two items:

1. **Predictions for the Test Set [10%].** The test set will be release without any groundtruth annotations. This will be done in order to avoid students from using this dataset for training.
2. **Technical Report [20%].** The document should not exceed **3 pages**. Use the IEEE conference template (<https://www.ieee.org/conferences_events/conferences/publishing/templates.html>). You don’t need to include an abstract or introduction. Include several plots showing results of your inference on the training and test sets, and your analysis (e.g., comparing learning curves). The report should follow the structure of the template specified at the end of this document. If this structure is not followed then points will be removed. You are welcome to add more subsections if needed.

Remember that you are welcome to try some complex models for prediction, but this first round of the project is only meant to provide a baseline so classical machine learning techniques are acceptable.

**ProjC2 - Deliverables [70%]:**

You will be turning in three items:

1. **Predictions for the Test Set [40%].** Same guidelines as above, except we will be producing three scoreboard option for students to submit their predictions in order to allow students to compare their results with other teams. A function on your performance score will be set and specified for getting a full grade on this assignment.
2. **Technical Report [20%].** Same guidelines as above.
3. **Document Code [10%].** You will provide your code. The document should at the very least include a ReadMe or some document describing what library dependencies are needed for your code to run, what scripts to execute for training, and which ones to execute for testing on a new dataset.

[Team **##**] **Proj-C: [YOUR TOPIC]**

**1st Full Student Name (Unity ID), 2nd Full Student Name (Unity ID), 3rd Full Student Name (Unity ID)**

# Methodology

**Include a description of your approach including citations to papers describing the methodology, and references to toolboxes (and specific functions) used for the implementation. Provide details about the structure of your network (number of layers, neurons and type of connections). You may include a diagram.**

# Model Training and Selection

## Model Training

**Make sure to answer the following: How did you split your data for training / validation? Did you do any type of data augmentation? If so, provide details.**

## Model Selection

**Make sure to provide details on how hyper-parameters were selected. Plots illustrating learning curves and trade-off between parameter choices, or a table comparing performance between initial and optimized parameters are necessary.**

# Evaluation

**Include plots or tables showing the training and validation errors of your final model. If you left a separate set for testing you can report this test here as well. Report precision, recall, accuracy and F1 scores for each class and the average. Also, include some illustrations of your prediction on the test set that was provided to you.**

##### References

**Every project description should have at least on reference (the work that inspired your choice of structure). If you don’t have any references points will be taken of.**