# 18794 Pattern Recognition

Course Project Guidelines

# General Guidelines

* The goal of the final project is to get experience trying to do a piece of original research in pattern recognition and coherently writing up your results in a paper style format.
* What we expect: a simple but original idea that you describe clearly, relate to existing methods, implement and test on a small scale problem, or present theoretical analysis (if you prefer) of the proposed approach.
* To accomplish this will need to formulate the problem, write some basic code, run it on some data, read a few background papers, collect some references, and write a few pages describing your model, results, analysis. You are free to use any code bases out there such as PyTorch, Tensorflow, Caffe/Caffe2, MxNet, scipy, numpy, MATLAB etc.
* Students must form a team of **two or three** for the project (We encourage you to use the discussion section in canvas or the physical classroom to find your teammates).
* Start early! Start early! Start early! And finally Start Early!

# Specific Instructions

* Proposal: a short description of the project, including: a title, Andrew ids of the members and a short description of your proposed project (about one page). The description should include the problem you want to solve, the motivation of the proposed method, related works and datasets you plan to use. If you have trouble coming up with a project idea, talk to the TAs or the Prof. This proposal is meant to help you to concretize your thinking and to get you more organized.
* Midway report: it should include more detailed introduction, review of related works, details of the proposed method, and preliminary results if available, in 2 - 3 pages.
* Final report: the final report should be like a full academic paper, including: problem definition and motivation, background and related work, details of the proposed method, details of experiments and results with analysis, conclusion and future work. Final report should be in [NIPS style](https://nips.cc/Conferences/2018/PaperInformation/StyleFiles), around 8 pages excluding reference.

# Grading Criteria

* Clarity of problem statement and description of approach.
* Feasibility of approach and the overall project.
* Discussion of relationship to previous work and references.
* Design and execution of experiments, or presentation of theoretical analysis of the proposed approach.

# Additional Advice

* Be honest, as you are **NOT being marked on how good the results are**. What matters is that you clearly formulate the problem, describe your method, what you did, and what the results were. We are looking for a logical workflow and not simply flashy results.
* Do not pick a project that is too hard. Usually, if you select a modest approach to try, and do it carefully, you will find that it will take much longer than you think. Executing a modest approach perfectly is preferred over a very ambitious project. Please talk to the Prof. or the TAs to gauge the difficulty of your project.
* Be careful not to do foolish things like test on your training data, set parameters by cheating, compare unfairly against other methods, include plots with unlabeled axes, use undefined symbols in equations, etc. These will be penalized during grading.