

**CSE 5693 Machine Learning: Term Paper/Project**  
**Due Mar 30 (Wed), 6:30pm; Submit Server: course=cse5693 , project=plan**  
**Due Apr 27 (Wed), 6:30pm; Submit Server: course=cse5693 , project=paper**

The term paper is based on a mini-research project. The goal is trying to improve one of the learning algorithms you have studied. You may also devise new algorithms. Empirically you will compare at least:

- your proposed improvement
- the original algorithm in the book
- (optionally/preferably) a proposed improvement in a research paper (journal or conference)

Resources for research papers: <https://cs.fit.edu/~pkc/classes/ml/resources.html>

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A. Plan (10 points) [Due Mar 30, Wed]

About one page, ACM format templates for conference proceedings: sample\_sigconf.tex (latex) or ACM\_SigConf.docx (Word) at <http://www.acm.org/publications/proceedings-template> (ignore Abstract, Categories and Subject Descriptors, General Terms, Keywords, and Copyright)

1. Introduction: motivation and problem statement
  2. Related work: cite 3 research papers you plan to read OR compare/contrast existing approaches in at least 3 research papers and discuss limitations
  3. Approach: your initial idea
  4. Evaluation: data (at least two sets) and criteria
- References: list of at least three related research papers

B. Paper (80 points) and presentation (10 points) [Due Apr 27, Wed]

Paper: at least 3 pages, ACM format templates for conference proceedings: sample\_sigconf.tex (latex) or ACM\_SigConf.docx (Word) at <http://www.acm.org/publications/proceedings-template> (ignore Abstract, Categories and Subject Descriptors, General Terms, Keywords, and Copyright)

Presentation: about 10 minutes

1. Introduction: motivation and problem statement
  2. Related Work (at least three research papers; compare/contrast existing algorithms and discuss limitations)
  3. Approach (your strategy: why it can overcome limitations of current techniques and exactly how it works)
  4. Empirical Evaluation
    - 4.1. Evaluation criteria
    - 4.2. Experimental data and procedures (description of the data, procedures include: preprocessing, parameters used)
    - 4.3. Results and analysis (results in graphs/tables and analyzing the results) [compare with the original algorithm in the book]
  5. Conclusion (summary of findings, limitations and possible improvements)
- References (cited in the text)

Submission:

- (a) paper (preferably in pdf)
- (b) presentation (preferably in pdf)
- (c) source code of the algorithms
- (d) source code for different experiments (testX scripts/programs/functions like the homework assignments)
- (e) datasets [if they are too large for Submit Server, put them at a website and include their links in README.txt]
- (f) README.txt on how to compile programs and run the different experiments on code01.fit.edu

Your paper will be evaluated mainly on the sophistication/innovation of your algorithm, the performance of your algorithm against the original book algorithm (and possibly an algorithm in one of the research papers), and your analysis of the results.