# Mini Course Project, SOMP / ELEC / STAT 602
## Neural Machine Learning and Data Mining II.

A small, focused project will be done over an approximately two-week period at the end of the semester. Projects will be presented in the last class period.

Project reports will be due in electronic form in Canvas, on Dec 4, as indicated in Canvas. The project grade will be determined by a combination of the project presentation and the project report.
Exact dates and details of requirements will be discussed in class in a timely manner.

### Characteristics of a Successful Project

1. It will be an implementation or examination of some particular aspect of a neural network algorithm we studied, or it will show the application of an algorithm on a particular problem.
2. It will be demonstrated as working, via tabulated results, figures, listing of code, description and discussion of results, etc. (as applicable).
3. It will be written up in a report that shows professional level of technical thoroughness, writing style, grammar and neatness.
4. It will be presented in a brief, approximately 15-minute, talk.

### Project Proposals

A short (approx. 1- to 2-page) project proposal will be submitted on or around November 9, and will have the following ingredients:
- Statement of Problem: a brief one-paragraph statement indicating what the problem is that you propose to implement or demonstrate
- Objectives: a brief statement of what you expect to achieve in relation to the Statement of Problem, e.g., a working algorithm, a demonstrated classification of data, model fitting, information discovery, etc., what research questions you want to answer
- Description of the data that you plan to use
- Technical Approach: a brief outline of the methods that you will employ to achieve the Objectives; and what success measures you will use

### Project Report

The Project Report should have the following format:
- Statement of Problem: as in the Project Proposal.
- Objectives: as in the Project Proposal.
- Data description: as in the Proposal
- Technical Approach: as in the Project Proposal but expanded as necessary to provide enough details to understand the actual processing steps.
- Results: substantiation and discussion of the results achieved in comparison to the initial objectives, insight drawn.
- Appendices: pertinent supporting material, such as code; and optional items, e.g., data (if not one used in class); proofs; extra plots, web links, etc., as applicable and as you feel necessary.

The length of the Project Report should be whatever is *necessary* to fully and professionally document your effort. Plan on 8 – 10 pages and under no circumstances exceed 12 pages not counting appendices. However, your report should be understandable without looking at any of the Appendices you may add. It should be submitted as a pdf.

**Project Presentation**

Projects will be presented in 15–minute time slots in the last class period. Slides made in a commonly used format (PowerPoint, beamer, pdf) can be used.

**Deliverables**

An electronic copy of the both the Project Presentation and the Project Report will be submitted by Dec 4.

**Project Grade**

The project grade will be composed of the presentation and project report points with approximately 30% and 70% weights for presentation and report, respectively. Within each category, the break down will be according to the following:

1. Technical merit (75%)
    a. Clear communication of the problem, clear statement of the research question(s)
    b. Clear communication of the approach, method
    c. Correctness of the approach, the execution of the approach, and the results
    d. Clarity of communication of the results
    e. Analysis of the results (discussion of the meaning, achievement, scope, limits; or demonstration of understanding why the approach did not work)
2. Quality of visuals (for presentation) or writing (for report) (25%), including
    a. Quality of figures
    b. Esthetic arrangement
    c. Correct credits and references
    d. Necessary length
    e. Correct use of English (including speaking style for presentation)