

Course Project, COMP / ELEC / STAT 502 Artificial Neural Networks and Information Theory I.

A Project will be done over an approximately four-week period in the second half of the semester. Approximate dates are given below. All pertinent final dates will be posted in the Course Schedule at www.ece.rice.edu/~erzsebet/ANNcourse.html, in a timely manner.

Students will form groups of 1, 2 or 3 by self-organization. Each group will submit a project proposal on or before March 13. It is anticipated that by that time the major ANN paradigms will have been discussed in class and students will be able to select a project topic, either from a list provided by me (including data), or devise their own. I encourage addressing a problem that is related to your graduate research, if you are working on a specific problem. I will review and approve each proposal (or suggest necessary modifications) in the order they are submitted. It will be the students' responsibility to schedule project reviews with me. Projects can start as soon as I approve them (so if a group submits a proposal on 3/8 and schedules review with me on the same day they may gain a week over groups that submit in the last minute). We will have a project presentation session on Thursday, April 17 or 19 (or both, depending on the number of projects), in regular class time. Project reports will be due at the same time or the next day (last day of classes). An electronic copy of both presentation and write-up will have to be submitted, in addition to a hard copy of the report. Exact scheduling and other details will be discussed in class in a timely manner.

Characteristics of a Successful Project

1. It will be an implementation of some particular neural network algorithm, or will show the application of an algorithm or group of algorithms on a problem of realistic significance.
2. It will be demonstrated as working, via printouts, tabulated results, listing of code, description and discussion of results, etc.
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 10-minute, talk.

Project Proposals

The project proposals will have the following format:

- Statement of Problem: a brief one-paragraph statement indicating what the problem is that you propose to implement or demonstrate, and why (what is the significance of it).
- 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.
- Technical Approach: a brief outline of the methods and techniques that you will employ to achieve the Objectives, including description of the data that you plan to use.

The Project Proposal should be short, no more than a couple of pages.

Project Report

The Project Report should have the following format:

- Statement of Problem – as in the Project Proposal.
- Objectives – as in the Project Proposal.
- Technical Approach – as in the Project Proposal, but expanded as necessary to provide enough details to understand the actual processing steps and judge the merits (soundness, correctness).
- Results – Provide a discussion of the results achieved, in comparison to the initial objectives.
- Appendices – Any pertinent material to demonstrate your work, e.g., listing of code; data; proofs of equations; extra graphs, plots, web links, etc.

The length of the Project Report should be whatever is *necessary* to fully and professionally document your effort. One hard copy and one electronic copy should be submitted. The electronic version will be in a commonly used format (Word, pdf).

Project Presentation

Projects will be presented to the class in 10 or 15–minute time slots. PowerPoint or Beamer slides can be used.

Deliverables

A hard copy of the Project Report will be submitted on the due date, TBA (anticipated date April 17).

In addition, an electronic copy of both the Project Presentation and Project Report will have to be submitted to Owl Space.

Project Grade

The project grade will be determined as follows: A project will have a maximum score of 100, 200, or 300 (for 1, 2, or 3 students). The front page of the project report must contain a statement, signed by each team member, indicating how much of the total percent of work was performed by each student. The total score earned by the project will be apportioned over the students according to the stated percentages. The score will be composed of the technical merit, the quality of the presentation, and the quality of the written report.

The more challenging and creative the project, the better is the chance to receive a high score. Thus, it may be better to partially fail at a challenging goal (and be able to explain the reasons) than to succeed at a trivial one.

I also encourage you to start thinking about potential projects (and data sources!) right from the beginning of the course, and feel free to discuss with me any questions.