Forecasting Competitions

ISDS 7075 Business Forecasting

This capstone class project will provide you with an opportunity to work with your fellow classmates. You will be "assigned" to a group of three to four students, depending on the class size. Each group will be required to turn in one project report, and all members of the group will receive the same grade, unless I have reason to believe that some members did not contribute equally to the project.

Group activities enhance learning and provide you with valuable experience, and a significant portion of work for your job will involve working with others. When executed poorly, they will be a source of great frustration and disappointment. Remember that a proper approach to group work requires responsibility, accountability, punctuality, team spirit, interpersonal skills, and a willingness to sacrifice your time for the group.

A. Forecasting Project

1. Project Topic

The class project will provide you with a solid background in performing data analyses of real-world forecasting problems. You may choose one of the two topics that are given in Appendices. One is a time series forecasting that involves an electrical load forecasting of 15 regions based on hourly temperatures. Another is an event forecasting that predicts potential donors of a fund-raising campaign of a non-profit organization.

The performance of your forecasting project is determined based on the absolute rank among the groups in each project. It would be your advantage to choose a less popular (i.e., a more challenging) topic and improve the rank of your group.

2. Data Preprocessing

You need to perform exploratory data analysis to get a good feel for the data and prepare it for data mining. It will be important to make good variable and case selections to reduce the data dimensionality. You may also normalize, transform, or delete any of the variables if necessary.

Unlike most data sets in textbooks, real-world data tend to be incomplete, noisy, and inconsistent. The forecasting data may include various anomalies such as missing values, outliers, inconsistent observations, misplaced decimals, etc. To improve the efficiency and the ease of the data mining process, you must "clean" the data first. Inspect the data carefully and identify and correct any anomalies.

3. Predictive Modeling

Your task is to develop classification and prediction models using given data set, check the validity of your predictive models, and then forecast unknown data points based on various predictor variables.

You may use any forecasting models you have learned and any software you are familiar with.

B. Written Report

Write up the results as a report to the upper-level management, either as a background summary report or as a proposal for action. Your report should be 6-10 pages long and should follow the following format:

▪ **Cover Page:** Includes the group number and the names of group members.

▪ **Introduction**: Describe the background of your research, questions of interest, and the data set clearly as if to an intelligent person who happens to know nothing about the details of the forecasting project.

▪ **Methods, Analysis, and Results**: (may be divided into a few more sections) Analyze the data, presenting figures and numerical results, explaining as you go along.

▪ **Conclusion and summary**: Summarize your results, describe the performance of your forecasting model, and explain any limitations of your study.

The final report must be typed on plain, 8.5" x 11" white paper, with numbered pages and 1-inch margins (at the top, bottom, and on each side). The paper should use 1.5 line spacing and should not use type smaller than 12 pitch. ~~The paper copy of your written report must be fastened securely and in a manner that makes it easily stackable with other reports. (The use of binder clips or plastic spiral binders is strongly discouraged.)~~

The formal written report should be turned in before the due date. One of your group members will upload the file to Moodle on behalf of the entire group ~~and bring a paper copy to the class on the day of presentation.~~ Each group member will fill out *Form A: Peer Evaluation Form* which is available in Moodle.

Believe or not, conflict often occurs among group members. The key to avoiding conflict is to (i) stay focused on the subject, not the people involved, (ii) try to understand the other person's point of view and avoid judgmental and inflammatory language, (iii) listen carefully and check for understanding, identifying areas of agreement and building on them, (iv) keep the meeting focused on the work of the group, not the feud, (v) recognize that a feud may have started long ago, (vi) work to keep the feuding parties from dominating the meeting, and (vii) ensure that the feud is handled outside of the meeting.

Of course, people will often have differences of opinion. After all, diversity of opinion and knowledge is one of the reasons we form groups in the first place. However, one can disagree without being disagreeable. This avoids feuds between group members that can become distractions to the group.

C. ~~Classroom Presentation~~*

You need to create an effective PowerPoint presentation and upload the file to the class web site before the due date. The PowerPoint file cannot be replaced or modified once submitted and will be saved in the classroom computer for your oral presentation.

Each oral presentation shall last no longer than 8 minutes. There will be no questions allowed during the presentation. A two-minute discussion period, moderated by the instructor, will begin following the oral presentation.

Each presentation will be graded by the students, as well as the instructor, based on a variety of factors in *Form B: Oral Presentation Evaluation Form* (which is available in PDF format).

Each student is allowed to ask only one question during the discussion session. Multi-part questions and follow-up questions are not permitted. However, if requested by the presenters, a question may be further clarified.

The grading for questions will be as follows: By simply being in attendance, each student receives a grade of 1. This grade may be modified to 2, or 3, depending on the "quality" of a question that is posed by the student to the presenters during the discussion session.

D. Video File

Each group also needs to submit a video file of the project presentation in mp4, wmv, avi, flv, mpeg, or mov format. (You have never created a video file before? It is never too late to learn something new!)

Good presentations include concise slide content that is supported and reinforced by a presenter's gestures and discussion. When creating a video version of a presentation, you will probably want to "capture" the human element of the presentation by recording and timing voice narration and even laser pointer gestures.

With a headset or a microphone and speakers, record a PowerPoint presentation and capture the voice narration. (You can also turn your mouse into a laser pointer.) The total length of your presentation should be no longer than 8 minutes. Once you have a recorded version that you like, save your file and check if your animated, narrated, multimedia presentation is playing without a glitch.

Save your presentation as a video. (you need to "Save & Send" or "Export" your file in Microsoft PowerPoint). You can control the quality of your video and the size of the multimedia file. The lower the video quality, the smaller the file size. Choose "Low Quality" (preferably 852x480 or less) for a smaller file size.

Upload your video file to the class web site before the due date. If your file is too big, you need to reduce its file size online or with a software. (If all things fail, you may save the video file in One Drive, Google drive, or Box and email me the link.)

E. Epilogue

Based on my experience, employers are looking for someone who can add, write, talk, and get along with others. Thus, you must have analytical skills, communication skills, and people skills to successfully compete in the job market. This group project is one of the most effective tools in improving your skills in those three areas.

By the way, plan ahead to avoid a last day panic! The last week of the semester will be incredibly hectic!