Team Project: A Prototype for a decision support system that uses predictive modeling

Predictive Analytics (CIS432, Spring B 2022)

Simon Business School

Instructor: Yaron Shaposhnik
Due date: Thursday 4/28 at 10pm

Description: In this assignment, you will develop a predictive model and a decision support system (DSS) that evaluates the risk of Home Equity Line of Credit (HELOC) applications (this is the same dataset you have been working with in your homework assignments). The dataset and the description of the data are included in this assignment (you may find additional information here: https://community.fico.com/s/explainable-machine-learning-challenge).

Details:

1. Design an interactive interface that sales representatives in a bank/credit card company can use to decide on accepting or rejecting applications.
    a. What did you assume about the technical proficiency of the user?
    b. What did you assume about the model requirements?
    c. How could the user explain predictions made by the model using the interface?
2. Develop a predictive model to assess credit risk
    a. Report on the performance of your model.
    b. Compare your model to other models.
    c. Explain why you selected the particular model.
3. Develop a (running) prototype of the interactive interface
4. Prepare a report (up to 5 pages) that summarizes the key ideas of your work and describes your considerations in making certain design choices.
5. Prepare a presentation (at most 5 minutes long) with a live demonstration of your system that covers the above topics, and includes a discussion about lessons learned. Think about how to prioritize the content of the presentation given the background of your audience (e.g., the teaching staff and fellow students that are familiar with evaluation techniques and the models covered in class). All team members should present.
6. The assignment is due Wednesday 4/28 at 10pm. Late submissions will not be accepted.

You may find the package Streamlit (https://www.streamlit.io/) useful for constructing the prototype (although you are not required to use it). A video recording on the topic is posted on Blackboard (other tutorials are available on the official website and youtube).

Teamwork: the assignment should be submitted in teams of 4-5 students. In contrast to previous guidelines (on the syllabus), it is up to you to form the teams. Students who do not find enough teammates (fewer than 4 students) will be matched with other teams. All teams should register on Vocareum (even teams with fewer than 4 students). Please see the instructions below.

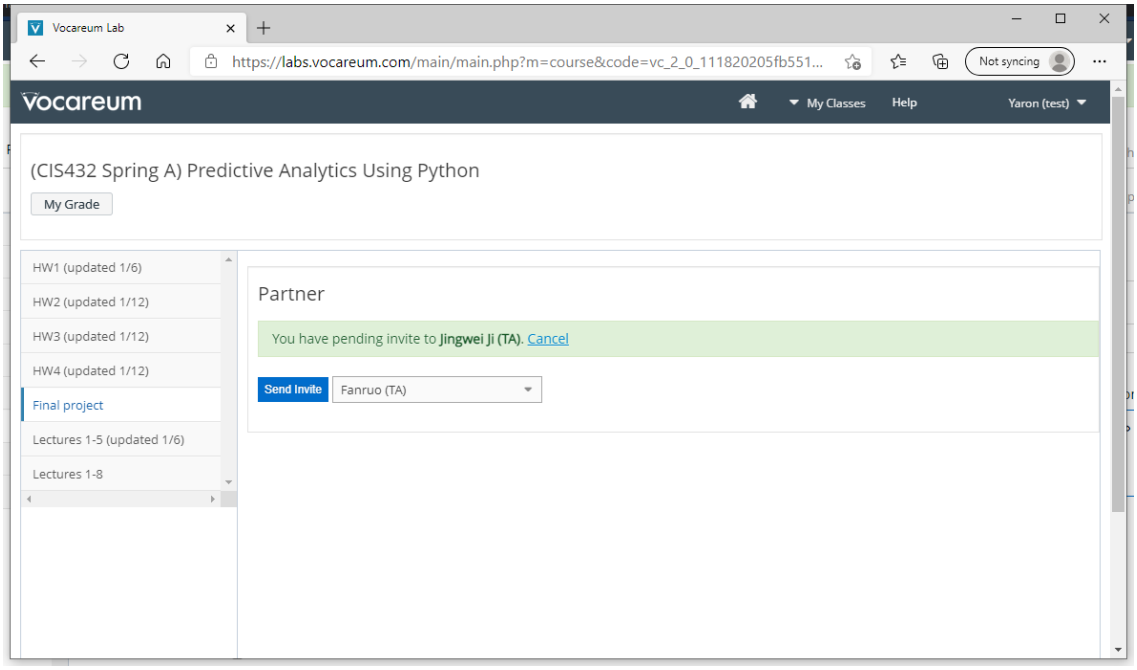
Submission: Use Vocareum to register your team and upload your submission (presentation, video, report, code). Note that your solution may be shared online with other students.

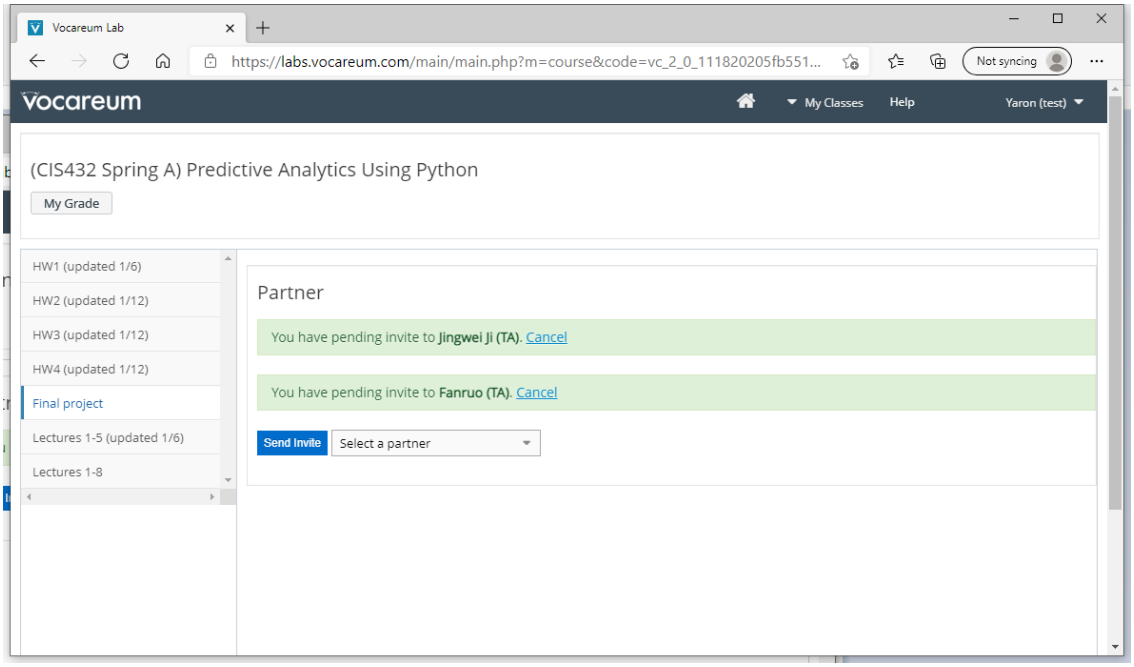
Tips for teamwork

- Please start early – often tasks require more time than initially anticipated
- Please be a good teammate – working in teams could be a fun experience when team members brainstorm ideas, decide together on a course of action, and divide work effectively. It could also be frustrating when some teammates are not responsive, are not flexible in scheduling times and on joint decisions, and when decisions are made in subgroups that start early and "force" to other teammates to accept their decisions. Please try to be respectful and professional towards your teammates. There is no optimal solution to this assignment, it is open-ended and there are many great solutions.
- Prioritize – you may not have enough time to develop the interface with all the software features you have in mind. That's ok – try to prioritize and implement a good solution with essential but fewer features.
- Try to have fun! While you may have other deadlines to worry about, most teams would get good grades for this assignment. Try to use this assignment as an opportunity to connect to fellow students, reflect on the material studied in class, and be creative in developing out of the box solutions.

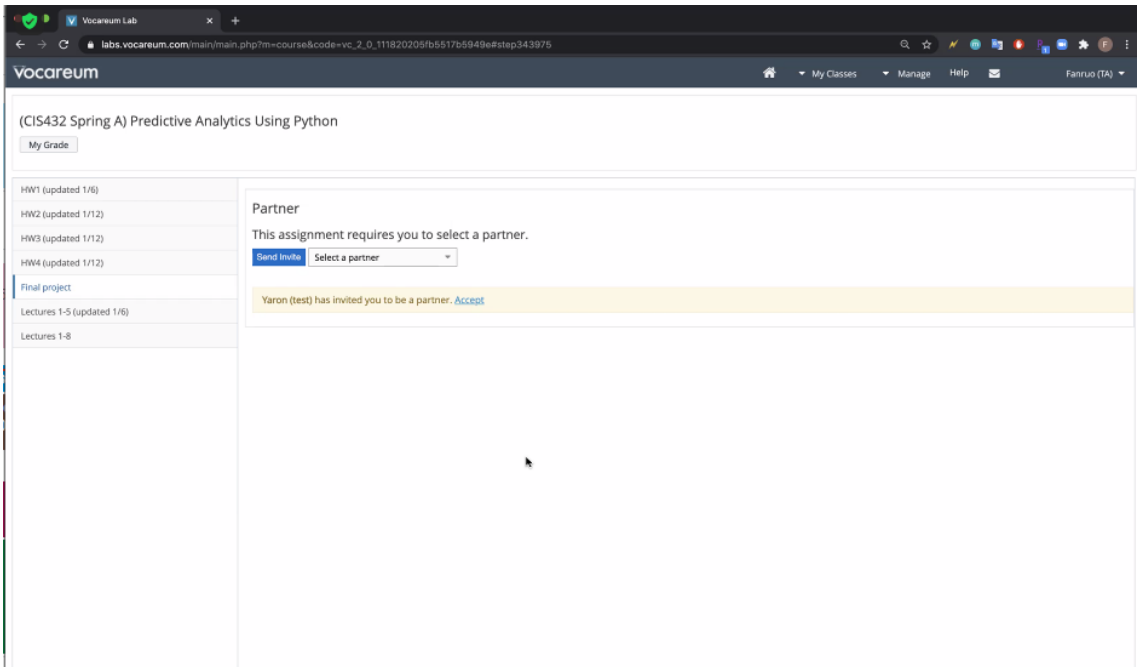
Registering teams on Vocareum

One student per team (a “team leader”) should invite the other team members.

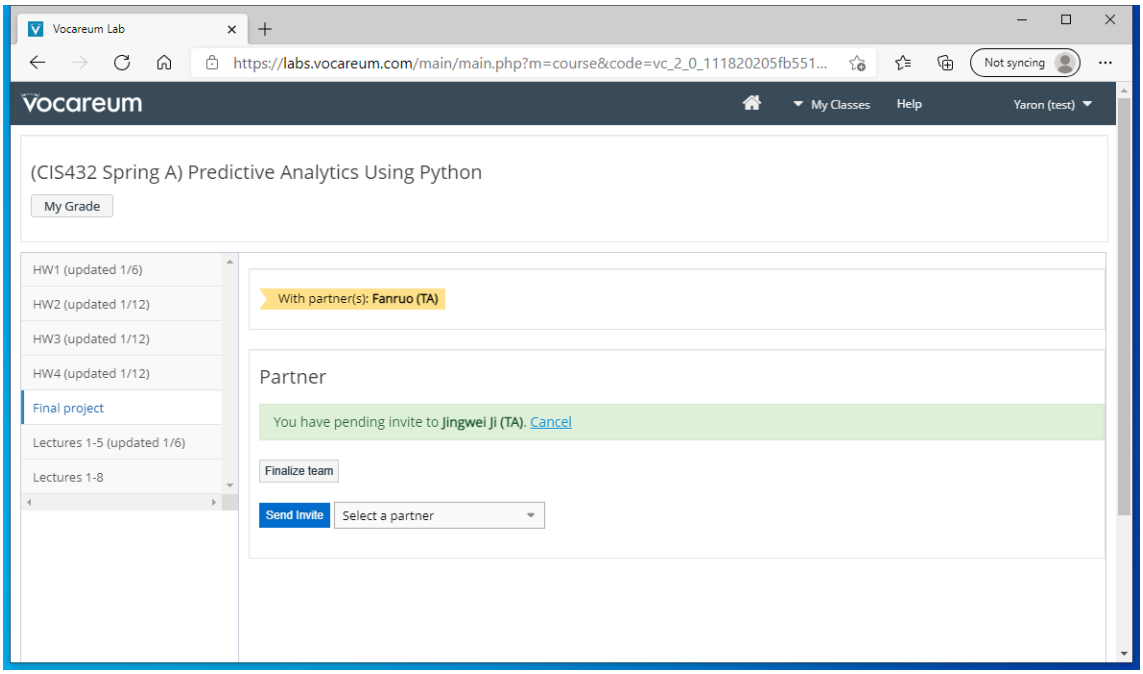




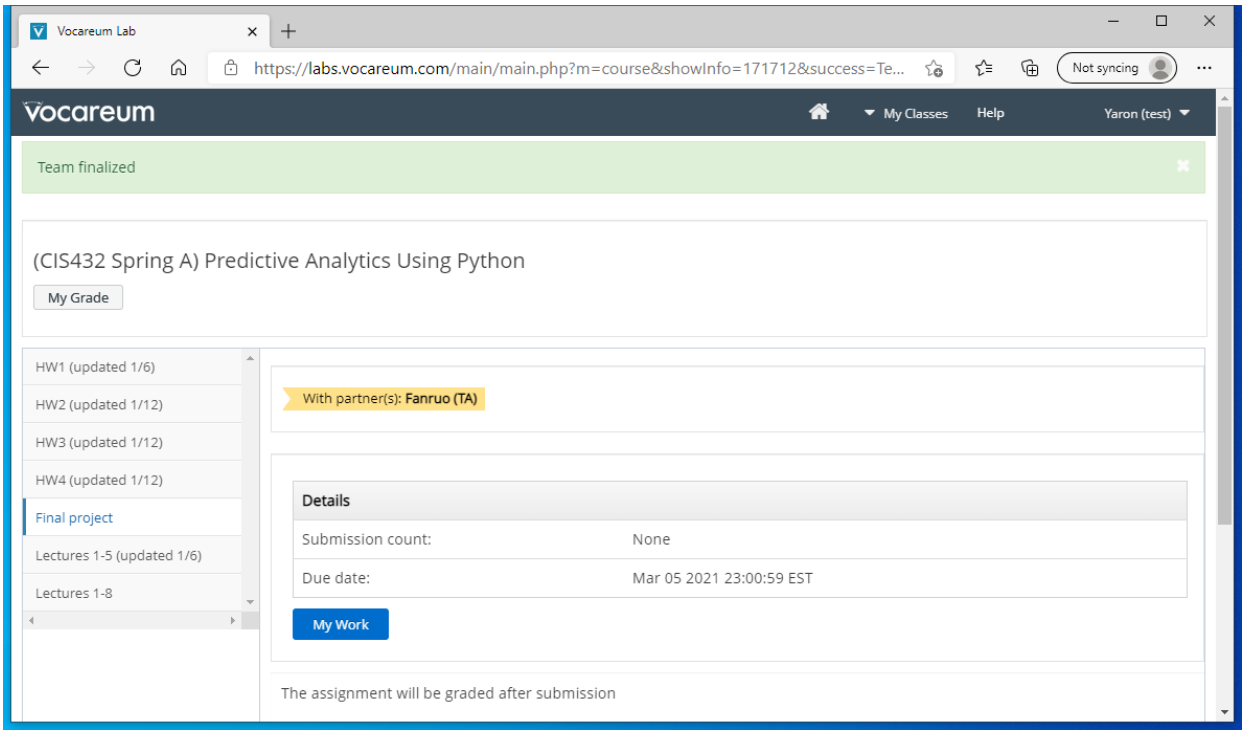
The other team members should accept the invitations (through Vocareum, using the “Accept” link below)



This will show on the team leader’s screen (yellow message). Once all team members joined, the team leader should click on “Finalize team”**.**



After finalizing the team, all members can click on “My work” to view the assignment files.



This opens the jupyter environment using which the team leader uploads and submit the files, which would later be manually graded.