CL 603 **Optimization** **Autumn 2024**

Group project

Report submission due date: September 22, 2024. Presentations will be held on October 5, 2024.

The objective of this project is to get exposure to a specific topic in the area of numerical optimization. You will work in a group (maximum size of 3). Your group will be allotted a topic. For that topic, you need to

1. demonstrate understanding about the fundamental principles governing the algorithm. This can include graphical illustration, analytical derivation, type of problems solved, etc. You can demonstrate this using a simple example.

2. perform a literature survey. This will include variants of the algorithm available in literature. You are supposed to give only outline of the various other approaches that are similar to the basic algorithm assigned to you. Further, literature survey could include types of problems that have been solved using this algorithm.

3. implement the algorithm to solve a simple problem. You are supposed to submit codes for the same. Do not use any in-built function of specified algorithm in MATLAB/Python for coding. You are supposed to code it yourself. The code can be problem specific and need not be very general. Of course, you can use inbuilt tools to check correctness of your results/approach. You are welcome to take initiative and compare the algorithm with other algorithms which are applicable to that class of problems. You can compare them on the basis of computational time required, optimal solution obtained, etc.

4. provide remarks and comments about the algorithm such as trade-offs in terms of computation effort required, system requirements/assumptions, any suggestions to improve it, etc.

5. submit the report incorporating the above-mentioned details. Additionally, you are required to report contributions from each group members. You can look at any recent journal publication from a reputed journal for help. Reporting author credit is mandatory these days for journal publication. The report should be in pdf format and the code files can be uploaded as individual files.

6. prepare and deliver a 15 minute presentation to the class. Note that these topics are not covered in the class so your objective is to teach these concepts to your peers. Your presentation need not be a conversion of the pdf report into a ppt. Make it as interactive as possible.

Register your group using https://forms.gle/dJu2WXb2BAgAiJSq5 before August 23. Topics will be assigned on a first-come-first-serve basis. There will be no change in the topic allotment.