CISC455/851 - Winter'23 - Group Project Description

Objectives:

The goal of this group project is to exercise on implementing an evolutionary algorithm to solve application problems following the workflow:

1. Identify an application problem that is significant, challenging, and truly interesting to you
2. Determine if EA is a good candidate solver
3. Design an EA for the application problem
4. Implement your EA
5. Compare your EA performance to at least one other algorithm
6. Discuss your results

Milestones:

1. Group enrollment (by January 24th, Google sheet)

2. Pitch presentation (February 27th to March 3rd, in class)
   3 minutes for each group, followed by a one-minute Q&A.

3. Project proposal (by February 14th, OnQ)
   The maximum 3-page proposal (excluding references) should follow the structure of "Problem description and motivation" - "Justification of using an EA" - "Proposed EA" - "Implementation plan" - "Group responsibility delegation" - "Timeline"

4. Project report draft (by April 11th, OnQ)

5. Project final report and code (by April 25th, OnQ)
   The maximum 8-page final project report (excluding references) should follow the structure of "Abstract" - "Problem description" - "Literature review" - "EA design" - "EA results" - "Comparison" - "Discussion". Please use Latex and submit your final .pdf file. Please also include in your report a GitHub link to your code. A description about how to execute your code should be provided there as well. Your EA should be implemented from scratch. The implementation of the alternative algorithm(s) can use libraries or packages. This should be described in your written report.

Marking:

1. Pitch presentation

   technical soundness (30%) + slides quality (30%) + idea delivery (20%) + story flow (20%)

2. Project proposal

   application problem and motivation (30%)

   justification and design of proposed EA (30%)

   feasibility of implementation plan (20%)

   Job delegation and timeline (20%)

3. Project report and code

   importance and difficulty of the problem (10%)

   review of existing literature (10%)

   EA design and justification (20%)

   employment of advanced technique(s) (10%)

   results presentation and comparison (20%)

   writing quality (15%)

   code quality (15%)