CS454 Individual Report

Team 12
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I. Contribution

1. Project Pitch (Slide name: Comparison of Meta-heuristic Optimizations for SPMP with impacts of Team Efficiency)

   I wrote some part for the previous problem definition. Because of the other schedule, I didn't do much work; for instance, I didn't speak by myself when we present.

2. Paper Reading & Presentation (Paper: Ant Colony Optimization for Software Project Scheduling and Staffing with an Event-Based Scheduler)

   Presentation was composed up by 5 sections: Introduction, Model Description, Event-Based Scheduler, ACO Approach, and Results & Discussion. I covered the introduction part which explains the previous model and the weakness of previous researches, and the model description part which explains the proposed model in detail and compare other previous models with analysing failures. To cover the absence for the project pitch, I tried to cover as much as I can do.

3. Final Presentation and implementation (Slide name: Comparison of Meta-heuristic Optimizations for SPMP with impacts of Team Efficiency)

   We have used four different types of the meta-heuristic optimizations: ACO, Tabu, NSGA-II and MOCell. Among them, I implemented NSGA-II part for the project, which is one of two genetic algorithms including MOCell. When we analyze the result, however, me and Eunji found that our implementation fails continuously to achieve valid gene from the initial invalid genes. Thus, when we present our work, I took the explanation part of NSGA-II and the comparison part for give the reason why GAs currently fails to achieve the valid solution.

4. Final Report

   After the final presentation, me and Eunji decided to adjust the available dedication range of each employee for each task as $\{0.0, 0.1, ..., 0.5\}$, which was originally $\{0.0, ..., 0.9\}$. Then the algorithm have shown the improved result. After that, we have started to write the final report. In the final report, each participants have wrote their algorithm (in my case, NSGA-II), and I additionally covered the section for the experiment setup. By the way, I adopted the file I/O for the input from the external text, but I feel sorry for others not to notice them to use that part.

II. Peer Evaluation

1. Jaehoon Choi
   Team leader. When I failed to find the project team, he encouraged me and other students (who finally became the last team) to gather as the last team. He also suggested first for the outline of the entire project including the topic itself and the distribution of our workload. Without his encouraging words, we might even fail to give the result. For the presentation and the report, he covered the generic sights including the methodology and our newly suggested term, the team efficiency.

2. Eunji Lee
   She was relatively silent than others, but for the implementation tasks, she committed her current work faster than others almost always. She also implemented the random search result to prepare the baseline comparison. For each presentation and the report, her role was changed often than others (for instance, she prepared the Ant Colony Optimization part for the paper presentation, but she explained other algorithm for the final presentation, and covered the introduction part of the report), but she performed her best. With her flexible coverage, we didn't have much trouble to progress our work.

3. Phan Duy Loc
   With Jaehoon, he actively talked to each teammates including myself. In the presentation and the report, he covered the result analysis and discussion part. Since he voluntarily took that parts, he made others comfortable to prepare presentation and the report. He also gave advice and analysis frequently to me and Eunji about adjusting parameters for GAs, which helped us to escape from the constant failure.

III. How to execute my code in the group submission page

In the group submission, there is a source code in the folder src for the algorithm that implemented NSGA-II with file I/O, nsga2-data2.py. It can accept the regulated form of the data (Norm1.txt, Norm2.txt, Elite1.txt, and Elite2.txt. They are included in the datasets folder.) You can execute it by giving the command on the shell: python3 nsga2-data2.py data_name.txt > output_name.txt.