

## **Minutes of Meetings Group-G**

### **Day 1 date 17th Nov 2023**

#### **Attendants:**

Prabhat Chauhan  
Sai Komal Suriseti  
Kunyang Ye  
Yushan Kuerban  
Jiayun Shen

Group met and introduced each other ,then we discussed the assignment , visited the geeko website, decided to read the problem and objective function by next week and divide the task between the group members. The problem is a multi-objective problem to solve.

### **Day 2 date 24th Nov 2023**

#### **Attendants:**

Prabhat Chauhan  
Sai Komal Suriseti  
Kunyang Ye  
Yushan Kuerban  
Jiayun Shen  
Tianheng Ying

Yushan presented his understanding and concerns regarding the topic, and the group discussion led to the following outcomes:

1. Derived the optimal solution for the packing plan using evolutionary algorithms.
2. Determine the optimal route using various algorithms based on a fixed packing plan. Group members will individually explore different algorithms to address the TSP problem. A decision on the most optimal algorithm will be reached through discussion and sharing on November 27th after class.
3. Created a Git repository for efficient code management next week.

### **Day 3 date 29th Nov 2023**

#### **Attendants(Online):**

Kunyang Ye  
Yushan Kuerban  
Jiayun Shen  
Tianheng Ying

Kunyang Ye shares a solution of the problem and suggests split assessment to multiple sub-task(check above table), then we discussed details of solution and next step works, and here is the outcomes:

1. Decided to use EA solve Packing problem and TSP parts of the problem

2. Assign different sub-task to each group member to solve the whole problem concurrently.
3. We Defined the structure of data to easily handle In future coding work(specially packing problem and TSP)

**Day 4 date 2nd Dec 2023**

**Attendants(Online):**

Kunyang Ye  
Yushan Kuerban  
Jiayun Shen  
Tianheng Ying  
Prabhat Chauhan  
Sai Komal Suriseti

Prabhat Chauhan shared the Particle Swarm Optimization (PSO) algorithm with the animation of a sample solution search for single objective optimization. PSO is a population-based algorithm inspired by collective behaviour. It involves particles moving through a solution space, adjusting positions and velocities based on personal and global best solutions. Each particle maintains a set of solutions representing trade-offs between conflicting objectives. PSO is known for its simplicity, ease of implementation, and effectiveness in both single and multiobjective optimization tasks. It was decided to further explore the PSO for current biobjective TTP problem. The programming is under progress, and in the coming weekend the results will be compared to finally select and implement one of the three approaches; the other being EA and ACO.

**Day5 date 6th Dec 2023**

**Attendants(Online):**

Kunyang Ye  
Yushan Kuerban  
Jiayun Shen  
Tianheng Ying  
Prabhat Chauhan  
Sai Komal Suriseti

During the meeting, the group discussed the common report writing task. The report will focus on the introduction of three different Nature Inspired approaches viz. EA, ACO and PSO and their effectiveness in solving the TTP problem. Group members divided the task between them and agreed to compile the individual research into a common report in the coming days. Analysis of the results and comparison from three different approaches was also deliberated upon.

#### Division of Major Group Tasks

No	Assessment	Person	Status
1	Provide code for parsing and processing documents.	Jiayun Shen	Done
2	Provide code to optimise the TSP problem.	Yushan Kuerban	Done
3	Provide code to optimise the KP problem.	Yushan Kuerban	Done
4	Research Variable Neighborhood Search and provide a research result	Yushan Kuerban	Done
5	Provide code to calculate fitness.	Kunyang Ye	Done
6	Write the main logic and ensure that the program runs.	Tianheng Ying	Done
7	Providing code for PSO algorithm for comparative study	Prabhat Chauhan	Done
8	Exploring Reinforcement learning to solve TTP	Sai Komal Suriseti	Done
9	Use code to analyse the results obtained from the Pareto curve.	Prabhat Chauhan	Done
10	Write group report		Done

Group G	Name	Signature
1	Jiayun Shen	Jiayun shen
2	Yushan Kuerban	Yushan Kuerban
3	Kunyang Ye	Kunyang Ye.
4	Tianheng Ying	Tianheng Ying
5	Prabhat Chauhan	Prabhat Chauhan
6	Sai Komal Suriseti	S. Sai Komal