Assignment # III

IE501714 Swarm Intelligence, Autumn 2022
Department of ICT and Natural Sciences
Faculty of Information Technology and Electrical Engineering
NTNU in Ålesund

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Deadline 06.11.2022 at 23:59

Introduction:

- You are free to implement the tasks in any tool.
- The assignment has three main tasks. You have to do all of them in order to pass the assignment.
- You can work in groups to exchange ideas and getting help to accomplish the implementation parts, but you have to deliver an individual code (e.g., unity package) and an individual report to explain all the assignment parts.
- Present your assignment to your classmates (09.11.2022).
- Remember to deliver your assignment before the deadline and remember that you have to pass all the assignments to get access to the final exam.

Tasks:

Task 1: Finding an optimization problem.

Find an optimization problem that you would like to use it in this assignment.

- You should define the problem (refer to the optimization workshop), search space, continues vs. discreate, static vs. dynamic, constrained vs. unconstrained, ….
- Single objective vs. multi-objective.
- Prepare the data.
- Define your objective function (cost function).

Task 2: Select at least two optimization algorithms to solve the selected optimization problem.

- Select the optimization algorithms.
- Select the parameters in the optimization algorithms (justify your selection).
- Present your results

Task 3: Compare the results from the task 2.

- Compare the optimization results from task 2
- Discuss your results
- How can you improve these results

Optimization problems:

These are some of the possible optimization problems:

1. TSP
2. VRP
3. Scheduling problems
4. Parameter tuning (e.g., PID controller)
5. Etc.

Good Luck