Optimization result reporting:

**Dynamic Increasing of Low Mutation Ratio/Decreasing of High Crossover Ratio (ILM/DHC)** was found to be more effective with smaller populations (25 and 50 individuals), where higher mutation rates later in the search process introduced necessary diversity, helping the algorithm avoid local optima. **Dynamic Decreasing of High Mutation Ratio/Increasing of Low Crossover Ratio (DHM/ILC)** performed better with larger populations (200 and 400 individuals), where a higher crossover rate towards the end of the search allowed for the generation of stronger offspring, leveraging the diversity already present in the population.(Hassanat et al., 2019)

***Example for selection of mutationa and crossover weight value:***

*The values of mutation and crossover rates are calculated according to the generation level number. If the generation level is 500, the maximum generation is*=1600*, and the population size is*=100*, then the value of mutation and crossover rates according to the previous equations are:*

𝐿𝐺=500

𝐺𝑛=1600

𝑀𝑅=1−(500/1600)=0.69

𝑀=0.69∗100=69*individuals are to be mutated in generation level 500.*

*For Crossover rate:*𝐿𝐺=500,𝐺𝑛=1600*,*𝐶𝑅=(500/1600)=0.31

𝐶=0.31∗100=31*individual are to be used for the crossover process at generation level 500.*

Computing infrastructure used: Google colab T4 GPU

* Optimization of inclination angle (i) using genetic algorithm (GA), for minimum cumulative revisit time of constellation

Fitness function = minimum cumulative revisit time

Optimizing parameter = inclination (i)

Population size = 100,

NGen = 50

Number of plane = 3

Number of satellite per plane = 4

Fitness weight for revisit time = -1.0 (for minimizing)

HASSANAT, A., ALMOHAMMADI, K., ALKAFAWEEN, E. A., ABUNAWAS, E., HAMMOURI, A. & PRASATH, V. S. 2019. Choosing mutation and crossover ratios for genetic algorithms—a review with a new dynamic approach. *Information,* 10**,** 390.