

The evaluation method for each algorithm is based on a score of 100 which is based on two criteria as follows taking into account higher weights will be given for higher dimensions:

1. 50% summation of error values for all dimensions as follows:

$$SE = 0.1 \times \sum_{i=1}^{29} ef_{10D} + 0.2 \times \sum_{i=1}^{29} ef_{30D} + 0.3 \times \sum_{i=1}^{29} ef_{50D} + 0.4 \times \sum_{i=1}^{29} ef_{100D}$$

Where ef is the error values for all the functions and SE is the sum of errors and then find the score for this part as follows:

$$Score1 = (1 - \frac{SE - SE_{\min}}{SE}) \times 50$$

Where SE_{\min} is the minimal sum of errors from all the algorithms.

2. 50% rank based for mean values for each problem in each dimension as follows:

$$SR = 0.1 \times \sum_{i=1}^{29} rank_{10D} + 0.2 \times \sum_{i=1}^{29} rank_{30D} + 0.3 \times \sum_{i=1}^{29} rank_{50D} + 0.4 \times \sum_{i=1}^{29} rank_{100D}$$

Where SR is the sum of ranks then find the score for this part as follows:

$$Score2 = (1 - \frac{SR - SR_{\min}}{SR}) \times 50$$

SR_{\min} is the minimal sum of ranks from all the algorithms.

3. Combine the above two parts to find the final score as follows:

$$Score = Score1 + Score2$$

The top three winners will be announced.