Discrete optimization

Sayadi et al. (2013) propose a firefly-inspired algorithm.

Questions

1. Explain the cell formation problem and the need for optimization. Why is this a discrete problem? Give examples of other discrete optimization problems. How were these solved?

2. Implement the proposed algorithm and compare it on an artificial example to another known method. Explain the advantages and shortcomings of both methods for the particular example you considered.

References

Sayadi, M. K., Hafezalkotob, A., and Naini, S. G. J. (2013). Firefly-inspired algorithm for discrete optimization problems: An application to manufacturing cell formation. *Journal of Manufacturing Systems*, 32:78–84.