Report:

The start NoC is mesh which link placement presented in file “link_placment_mesh.csv”

1.

The result of traffic weighted zero-load latency $\sum_i \sum_j (m * h_{ij} + l_{ij}) * f_{ij}$ for the original mesh presented in Tab 1.

| Traffic | Complement | Rand | Uniform |
|---|---|---|---|
| weighted zero-load latency | 11155 | 48529 | 38428 |

*Tab. 1 weighted zero-load latency in original mesh for each traffic scenario*

2.

The comparison of different hyperparameters for the complement scenario is presented in Tab 2.

The initial hyperparameters presented in Fig. 1

```
T=500               # initite hyper parameters
Th=0.1
alpha=0.99
numlter=100
```

*Fig. 1 Initial Hyperparameters*

| Par | T | | | Th | | | alpha | | | numlter | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 500 | 1000 | 0.01 | 0.1 | 100 | 0.1 | 0.99 | 0.995 | 10 | 100 | 200 |
| Time m | 300 | 1020 | 1080 | 1320 | 1020 | 180 | 5 | 1020 | 2040 | 120 | 1020 | 2040 |
| cost | 9901 | 5355 | 4720 | 4757 | 5355 | 6640 | 6638 | 5355 | 4701 | 5863 | 5355 | 4591 |

*Tab 2 Result of the experiment*

More information presented in “Experemet_result.txt”

Increasing the T, alpha, numlter, or/and decreasing the Th increases the time and accuracy of the algorithm. Also, The SA algorithm is used $e^{-\frac{\Delta f}{T}}$ To have an opportunity to go out from the space near local minimum. In the beginning of the algorithm (when T is more oversized, so the exponent is higher), the probability of going out of the minimum local space is higher if the $\Delta f$ is relatively large in contrast at the end of the algorithm when it could go out local space if and only if $\Delta f$. So T, Th, alpha are used to cover the entire research area, and if this area had much local minimum closed to each other, it needs to reduce the step of the loop so reduce the (1-alpha). Moreover, numIter is needed to guarantee that this loop algorithm could go out from the minimum local space. In our case, the traffic-weighted zero-load latency research area is not big (because we do not increase the number of links, only change it) and is not too complex. The complexity of our area depends on the traffic scenario—that is why traffic parameters do not need to be significant.

3. The SA implementation presented in the code “HW2.py”

4. The NoC for the traffic becomes close to the significant traffic value to the top left angel or reduces the way to this core.

5. The result of the HW2.py is the .csv files where the name of the file is traffic what was used, the header is task placement, and the data is link placement.