The Dataset for FJSPT-CFRP

**Table 1** The data of experiment 1(EX1-EX7)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Experiment | Job and operation | | Processing time of the operation on the machine | | | | | The number of  machine/AGV/  grid | The location  of machine | The location of loading/  unloading point |
| M1 | M2 | M3 | M4 | M5 |
| EX1 | job1 | 1 | 4 | - | 7 | - | - | 3 / 2 / (3\*3) | 3,7,9 | 4 |
| 2 | - | 2 | 5 | - | - |
| job1 | 1 | 1 | 3 | - | - | - |
| 2 | 6 | 2 | 4 | - | - |
| 3 | 3 | 7 | - | - | - |
| EX2 | job1 | 2 | 4 | 6 | - | - | - | 3 / 2 / (3\*3) | 3,7,9 | 4 |
| - | 5 | 3 | - | - | - |
| job2 | 3 | 1 | - | - | - | - |
| 7 | 5 | 2 | - | - | - |
| 4 | 8 |  | - | - | - |
| job3 | 1 | 3 | 4 | - | - | - |
| EX3 | job1 | 1 | 7 | 4 | - | 5 | - | 4 / 3 / (4\*4) | 3,8,16,14 | 5 |
| 2 | 2 | 6 | 10 |  | - |
| 3 | 4 | 8 | 9 | 3 | - |
| job2 | 1 | - | 11 | 5 | 7 | - |
| 2 | 14 | - | 7 | - | - |
| 3 | 12 | - | 8 | 11 | - |
| 4 | 7 | 17 |  | 6 | - |
| job3 | 1 | 8 | - | 3 | - | - |
| 2 | 7 | 11 | 13 | - | - |
| job4 | 1 | 9 | 13 | 8 | 6 | - |
| 2 | 5 | 6 | - | 4 | - |
| EX4 | job1 | 1 | 14 | 18 | - | 9 | - | 5 / 3 / (4\*4) | 2,4,12,15,13 | 5 |
| 2 | 7 | 11 | 9 | 6 | 14 |
| 3 | 13 | 10 | 6 | 5 | - |
| job2 | 1 | 2 | 9 | - | 6 | 10 |
| job3 | 1 | 5 | 18 | 13 | - | 7 |
| 2 | - | - | 9 | - | 11 |
| 3 | 4 | 2 | - | 6 | - |
| job4 | 1 | 13 | - | 11 | 7 | - |
| 2 | 8 | 13 | 17 | - | 11 |
| job5 | 1 | 9 | 6 | 7 | 4 | - |
| 2 | 4 | 8 | 7 | - | - |
| 3 | 12 | 16 | 18 | 10 | - |
| 4 | - | 9 | - | 2 | - |
| EX5 | job1 | 1 | 13 | 12 | 9 | - | - | 4 / 4 / (4\*4) | 3,8,16,14 | 5 |
| 2 | 5 | - | 7 | 9 | - |
| job2 | 1 | 6 | 9 | 11 | 4 | - |
| 2 |  | 8 | 3 | 10 | - |
| 3 | 3 | 11 | 13 | - | - |
| job3 | 1 | 15 | 17 | - | 12 | - |
| job4 | 1 | 1 | 6 | 4 |  | - |
| 2 | 4 | 9 | 7 | 11 | - |
| 3 | 13 | 10 | 17 | - | - |
| 4 | - | - | 8 | 12 | - |
| job5 | 1 | - | 14 | - | 6 | - |
| 2 | 17 | 9 | 11 | - | - |
| job6 | 1 | 5 | 13 | - | 7 | - |
| 2 | 17 | - | 10 | 14 | - |
| 3 | 9 | 6 | 5 | - | - |

Continued Table 1

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Experiment | Job and operation | | Processing time of the operation on the machine | | | | | The number of  machine/AGV/  grid | The location  of machine | The location of loading/  unloading point |
| M1 | M2 | M3 | M4 | M5 |
| EX6 | job1 | 1 | 9 | 8 | 11 | - | 5 | 5 / 4 / (5\*5) | 2,4,15,24,22 | 11 |
| 2 | - | 13 | - | 12 | - |
| 3 | 18 | 11 | 10 |  | 16 |
| job2 | 1 | 13 | 9 | - | 4 | - |
| 2 | 2 | 7 | 11 | - | 13 |
| 3 | 15 | 9 | 6 | 7 | - |
| job3 | 1 | 5 | 4 | 17 | 15 | 8 |
| 2 | 10 | - | - | 7 | 4 |
| 3 | 11 | 13 | - | 5 | - |
| 4 | 9 | 7 | 11 | 13 | - |
| job4 | 1 | 17 | 9 | 7 | - | 14 |
| 2 | 5 | 7 | 13 | - | - |
| 3 | 8 | 9 | 6 | 11 | 12 |
| 4 | 5 | 15 | - | 19 | - |
| job5 | 1 | - | 21 | - | 18 | - |
| 2 | 16 | - | - | 14 | 12 |
| job6 | 1 | 7 | 8 | 5 | 11 | 9 |
| 2 | 2 | 11 | 15 | - | 4 |
| 3 | 7 | 9 | - | - | 5 |
| 4 | 11 | 10 | 17 | - | - |
| job7 | 1 | 13 | 9 | - | 6 | 5 |
| 2 | 20 | - | 17 | - | 7 |
| 3 | 8 | 13 | - | 15 | - |
| EX7 | job1 | 1 | 16 | 23 | 19 | - | - | 5 / 3 / (3\*3) | 3,7,9 | 4 |
| 2 | 9 |  | 15 | - | - |
| job2 | 1 | - | 25 | 18 | - | - |
| 2 | 15 | - | 11 | - | - |
| 3 | 18 | 21 | - | - | - |
| job3 | 1 | 17 | 11 | 21 | - | - |
| job4 | 1 | 16 | - | 13 | - | - |
| 2 | - | 15 | 11 | - | - |
| 3 | 18 | 21 |  | - | - |
| job5 | 1 | 16 | 15 | 8 | - | - |
| 2 | 8 | 17 | - | - | - |
| job6 | 1 | 14 | 18 | 5 | - | - |
| job7 | 1 | 19 | 14 | 13 | - | - |
| 2 | 12 | 17 | 9 | - | - |
| 3 | 11 | 13 | 9 | - | - |
| job8 | 1 | 16 | 20 | - | - | - |
| 2 | - | 16 | 18 | - | - |

**Table 2** Processing time of the operation on the machine for experiment 3 and 4 (EX10 and EX11)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Experiment | Experiment | Job and operation | | Processing time of the operation on the machine | | | |
| M1 | M2 | M3 | M4 |
| EX11 | EX10 | job1 | 1 | - | 16 | 15 | 21 |
| 2 | - | - | 17 | 17 |
| 3 | - | 25 | 17 | 16 |
| 4 | - | - | 18 | 23 |
| job2 | 1 | 10 | - | 20 | - |
| 2 | 18 | - | - | 12 |
| 3 | - | 25 | - | - |
| 4 | 13 | - | - | 23 |
| job3 | 1 | 20 | - | - | 16 |
| 2 | 23 | - | 14 | 20 |
| 3 | - | 22 | - | - |
| 4 | - | 12 | 17 | 15 |
| job4 | 1 | 12 | - | 19 | 24 |
| 2 | 19 | 13 | - | - |
| 3 | - | 24 | 12 | 18 |
| 4 | 21 | 23 | 19 | - |
| job5 | 1 | 16 | - | 23 | - |
| 2 | - | 13 | 14 | - |
| 3 | 21 | - | 25 | 16 |
| 4 | - | 11 | 19 | - |
| job6 | 1 | 18 | - | - | 22 |
| 2 | - | 20 | - | 25 |
| 3 | - | 15 | 11 | 23 |
| 4 | - | - | 18 | 25 |
| job7 | 1 | - | 16 | - | 22 |
| 2 | - | - | 16 | 11 |
| 3 | 25 | 17 | - | - |
| 4 | - | - | - | 17 |
| job8 | 1 | - | - | 14 | - |
| 2 | 25 | - | - | 19 |
| 3 | 10 | 23 | - | 17 |
| 4 | 11 | 17 | 10 | - |
| job9 | 1 | - | 18 | 13 | 14 |
| 2 | 11 | 19 | - | 16 |
| 3 | 20 | - | - | - |
| 4 | - | - | 14 | 16 |
| job10 | 1 | 14 | - | 10 | - |
| 2 | - | 17 | 19 | - |
| 3 | - | - | 23 | - |
| 4 | - | - | 12 | 25 |
| job11 | | 1 | - | - | 17 | 17 |
| 2 | - | - | 16 | - |
| 3 | 14 | 14 | - | 17 |
| 4 | 19 | 19 | - | - |
| job12 | | 1 | 23 | 23 | - | - |
| 2 | - | - | 10 | 21 |
| 3 | 18 | 18 | - | - |
| 4 | 22 | 22 | - | 15 |
| job13 | | 1 | 17 | 17 | - | - |
| 2 | 19 | 19 | - | - |
| 3 | 18 | 18 | 15 | - |
| 4 | 15 | 15 | 12 | 23 |
| job14 | | 1 | - | - | - | 18 |
| 2 | 18 | 18 | 25 | 19 |
| 3 | 10 | 10 | 17 | 10 |
| 4 | - | - | 16 | - |
| job15 | | 1 | 21 | 21 | - | - |
| 2 | 23 | 23 | 16 | 21 |
| 3 | 15 | 15 | 11 | - |
| 4 | - | - | - | - |