

- 1 General description of the framework and algorithms
- 2 Results
- 3 Discussion

Table 1: Computed values using the greedy algorithm, nearest neighbour strategy

| <b>Problem</b> | <b>Stamina</b> | <b>Time</b> | <b>Stam k=10</b> | <b>Time</b> |
|----------------|----------------|-------------|------------------|-------------|
| sastp10        | 36.9904        | 0.000317    | 43.2979          | 0.000118    |
| sastp20        | 67.2554        | 0.000634    | 67.2554          | 0.000188    |
| sastp50        | 161.933        | 0.002232    | 172.778          | 0.000422    |
| sastp100       | 374.093        | 0.001538    | 375.028          | 0.000964    |
| sastp200       | 793.968        | 0.007724    | 796.596          | 0.000937    |
| sastp500       | 2014.63        | 0.043226    | 2029.89          | 0.005059    |
| sastp1000      | 4264.6         | 0.43013     | 4300.32          | 0.041532    |

Table 2: Computed values using the greedy algorithm, insertion neighbour strategy

| <b>Problem</b> | <b>Stamina</b> | <b>Time</b> | <b>Stam k=10</b> | <b>Time</b> |
|----------------|----------------|-------------|------------------|-------------|
| sastp10        | 36.5321        | 0.000156    | 43.2979          | 0.000116    |
| sastp20        | 68.8606        | 0.000246    | 67.2554          | 0.000185    |
| sastp50        | 171.584        | 0.000454    | 172.778          | 0.000631    |
| sastp100       | 412.13         | 0.00029     | 375.028          | 0.000936    |
| sastp200       | 827.737        | 0.000566    | 796.596          | 0.00097     |
| sastp500       | 2376.64        | 0.001372    | 2029.89          | 0.005208    |
| sastp1000      | 4672.09        | 0.002952    | 4300.32          | 0.041532    |

Table 3: Computed values using the local search algorithm, using SpotOneOpt

| <b>Problem</b> | <b>St,Next</b> | <b>Time</b> | <b>St,Best</b> | <b>Time</b> | <b>Rand,k5</b> | <b>dev</b> | <b>Rand,k10</b> | <b>dev</b>  |
|----------------|----------------|-------------|----------------|-------------|----------------|------------|-----------------|-------------|
| sastp10        | 43.2979        | 0.000112    | 43.2979        | 0.000349    | 37.20065       | 0          | 43.2979         | 0           |
| sastp20        | 67.2554        | 0.002365    | 67.2554        | 0.002294    | 67.2554        | 0          | 67.2554         | 0           |
| sastp50        | 178.564        | 0.013751    | 175.745        | 0.0127      | 161.933        | 0          | 172.778         | 0           |
| sastp100       | 384.874        | 0.02014     | 402.286        | 0.030447    | 374.093        | 0          | 375.88233       | 1.142008    |
| sastp200       | 857.64         | 0.078691    | 833.037        | 0.101778    | 793.968        | 0          | 796.596         | 0           |
| sastp500       | 2213.13        | 0.655143    | 2200.94        | 1.55123     | 2016.26933     | 1.813267   | 2020.42533      | 0.715993476 |
| sastp1000      | 4551.06        | 4.05179     | 4495.62        | 5.62041     | 4265.61733     | 1.596358   | 4300.358        | 0.115948859 |

Table 4: Computed values using the local search algorithm, using Edge Two Opt

| <b>Problem</b> | <b>St,Next</b> | <b>Time</b> | <b>St,Best</b> | <b>Time</b> | <b>Rand,k5</b> | <b>dev</b> | <b>Rand,k10</b> | <b>dev</b> |
|----------------|----------------|-------------|----------------|-------------|----------------|------------|-----------------|------------|
| sastp10        | 43.2979        | 0.000242    | 43.2979        | 0.000241    | 36.9904        | 0          | 43.2979         | 0          |
| sastp20        | 67.9204        | 0.000463    | 70.4877        | 0.000687    | 67.9204        | 0          | 67.92           | 0          |
| sastp50        | 172.784        | 0.001767    | 172.784        | 0.001669    | 162.585        | 0          | 172.784         | 0          |
| sastp100       | 377.885        | 0.008368    | 378.099        | 0.008394    | 379.2828       | 0.40659    | 377.885         | 0          |
| sastp200       | 802.199        | 0.011204    | 803.431        | 0.015102    | 799.1285       | 0.0147     | 802.181833      | 0.22553    |
| sastp500       | 2041.32        | 0.0768      | 2040.74        | 0.132284    | 2026.952667    | 0.81686    | 2041.67633      | 0.70401059 |
| sastp1000      | 4311.8         | 0.322069    | 4313.89        | 0.862252    | 4281.740667    | 1.11036    | 4313.327667     | 1.2200499  |

Table 5: Computed values using the local search algorithm, using Method Two Opt

| <b>Problem</b> | <b>St,Next</b> | <b>Time</b> | <b>Rand,k5</b> | <b>dev</b> | <b>Rand,k10</b> | <b>dev</b>  |
|----------------|----------------|-------------|----------------|------------|-----------------|-------------|
| sastp10        | 43.2979        | 0.000809    | 36.9904        | 0          | 43.2979         | 0           |
| sastp20        | 69.2554        | 0.001723    | 69.2554        | 0          | 69.2554         | 0           |
| sastp50        | 176.778        | 0.009348    | 162.933        | 0          | 177.778         | 0           |
| sastp100       | 378.028        | 0.018937    | 375.693        | 0.813676   | 376.028         | 0           |
| sastp200       | 800.596        | 0.055929    | 794.968        | 0          | 798.596         | 0           |
| sastp500       | 2039.89        | 0.319632    | 2015.196669    | 0.504      | 2030.35666      | 0.507416    |
| sastp1000      | 4323.32        | 1.52362     | 4265.4         | 0.8469     | 4300.38666      | 0.253708132 |

Table 6: Computed values using the VND, using step function Next and Best

| <b>Problem</b> | <b>Next</b> | <b>K=5</b> | <b>K=15</b> | <b>AvgTime</b> | <b>Best</b> | <b>K=5</b> | <b>K=15</b> | <b>AvgTime</b> |
|----------------|-------------|------------|-------------|----------------|-------------|------------|-------------|----------------|
| sastp10        | 43.2979     | 36.9904    | 43.2979     | 0.000186       | 43.2979     | 36.9904    | 43.2979     | 0.000216       |
| sastp20        | 69.9204     | 69.9204    | 69.9204     | 0.000347       | 72.4877     | 72.4877    | 72.4877     | 0.000682       |
| sastp50        | 181.71      | 180.792    | 183.762     | 0.003695       | 183.466     | 181.028    | 183.762     | 0.004881       |
| sastp100       | 419.503     | 430.673    | 427.659     | 0.00444        | 415.655     | 423.094    | 425.901     | 0.0327143      |
| sastp200       | 904.585     | 902.955    | 890.698     | 0.468033       | 872.636     | 876.197    | 883.433     | 0.295227       |
| sastp500       | 2383.96     | 2391.84    | 2374.48     | 12.075         | 2352.63     | 2355.67    | 2360.78     | 7.00525        |
| sastp1000      | 4855.96     | 4852.87    | 4820.35     | 95.926         | 4656.65     | 4736.32    | 4758.07     | 37.86753       |