

HNCO

Fixed-budget analysis

November 18, 2020

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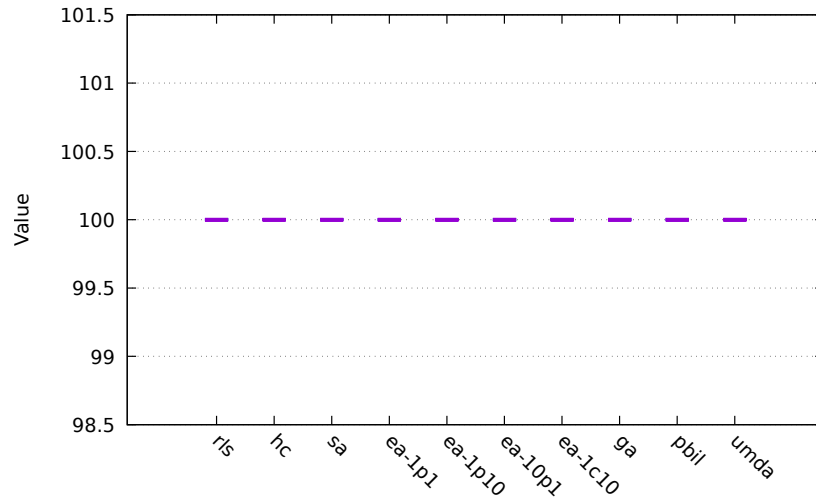
1 Global results

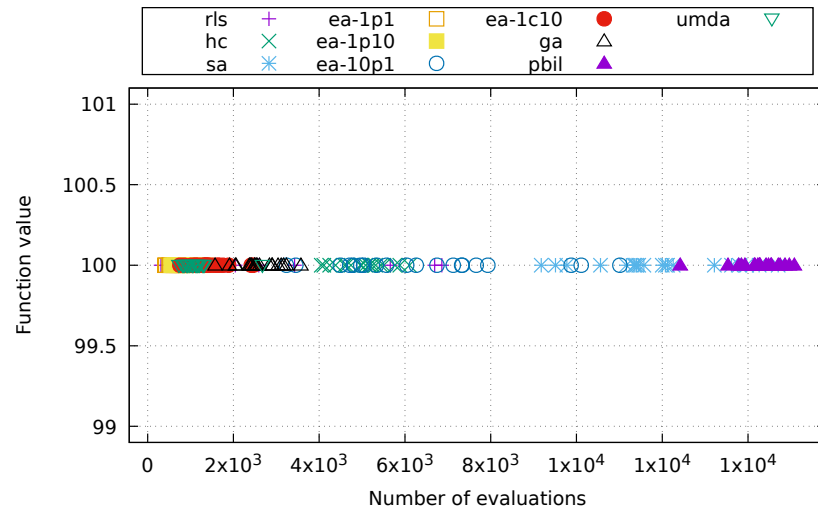
| Algorithm | Rank | | | | |
|-----------|------|-------|------|-------|-----|
| | min | Q_1 | med. | Q_3 | max |
| pbil | 1 | 1 | 1 | 6 | 9 |
| sa | 1 | 1 | 2 | 4 | 10 |
| ea-10p1 | 1 | 1 | 3 | 4 | 7 |
| ga | 1 | 1 | 3 | 5 | 10 |
| rls | 1 | 2 | 3 | 5 | 10 |
| hc | 1 | 1 | 4 | 5 | 10 |
| ea-1p10 | 1 | 1 | 4 | 7 | 9 |
| ea-1p1 | 1 | 1 | 4 | 8 | 9 |
| ea-1c10 | 1 | 2 | 4 | 4 | 8 |
| umda | 1 | 1 | 5 | 7 | 10 |

2 Function one-max

| Algorithm | Value | | | | |
|-----------|------------|------------|------------|------------|------------|
| | min | Q_1 | med. | Q_3 | max |
| rls | 100 | 100 | 100 | 100 | 100 |
| hc | 100 | 100 | 100 | 100 | 100 |
| sa | 100 | 100 | 100 | 100 | 100 |
| ea-1p1 | 100 | 100 | 100 | 100 | 100 |
| ea-1p10 | 100 | 100 | 100 | 100 | 100 |
| ea-10p1 | 100 | 100 | 100 | 100 | 100 |
| ea-1c10 | 100 | 100 | 100 | 100 | 100 |
| ga | 100 | 100 | 100 | 100 | 100 |
| pbil | 100 | 100 | 100 | 100 | 100 |
| umda | 100 | 100 | 100 | 100 | 100 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| ea-1p10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ea-1p1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ea-1c10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| rls | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| hc | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| umda | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| sa | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
| ea-10p1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
| ga | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
| pbil | 0.04 | 0.00 | 0.01 | 0.00 | 0.04 | 0.00 |

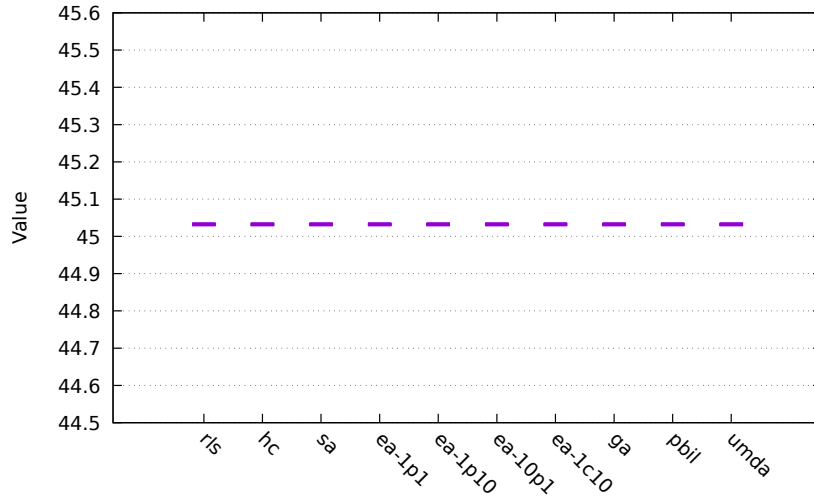


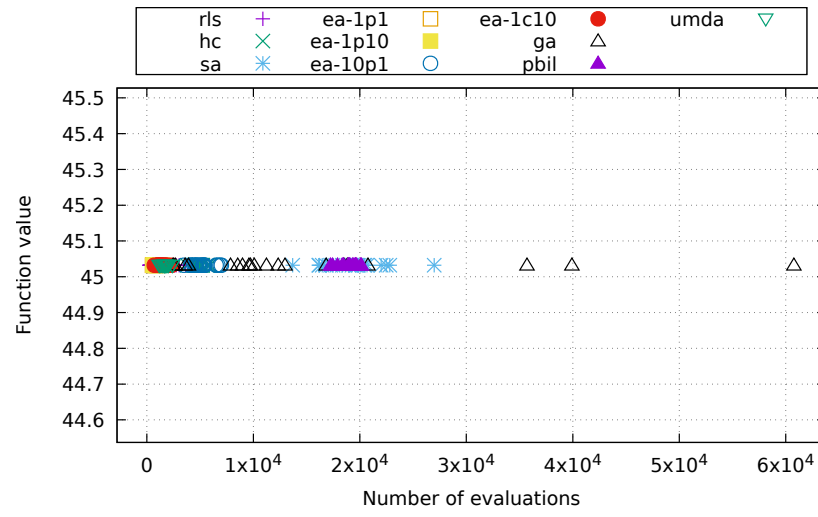


3 Function lin

| Algorithm | Value | | | | |
|-----------|--------------|--------------|--------------|--------------|--------------|
| | min | Q_1 | med. | Q_3 | max |
| rls | 45.03 | 45.03 | 45.03 | 45.03 | 45.03 |
| hc | 45.03 | 45.03 | 45.03 | 45.03 | 45.03 |
| sa | 45.03 | 45.03 | 45.03 | 45.03 | 45.03 |
| ea-1p1 | 45.03 | 45.03 | 45.03 | 45.03 | 45.03 |
| ea-1p10 | 45.03 | 45.03 | 45.03 | 45.03 | 45.03 |
| ea-10p1 | 45.03 | 45.03 | 45.03 | 45.03 | 45.03 |
| ea-1c10 | 45.03 | 45.03 | 45.03 | 45.03 | 45.03 |
| ga | 45.03 | 45.03 | 45.03 | 45.03 | 45.03 |
| pbil | 45.03 | 45.03 | 45.03 | 45.03 | 45.03 |
| umda | 45.03 | 45.03 | 45.03 | 45.03 | 45.03 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| ea-1p1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ea-1p10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| rls | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ea-1c10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| hc | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ea-10p1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
| umda | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
| sa | 0.01 | 0.00 | 0.01 | 0.00 | 0.02 | 0.00 |
| ga | 0.03 | 0.03 | 0.01 | 0.01 | 0.04 | 0.04 |
| pbil | 0.05 | 0.00 | 0.01 | 0.00 | 0.06 | 0.00 |

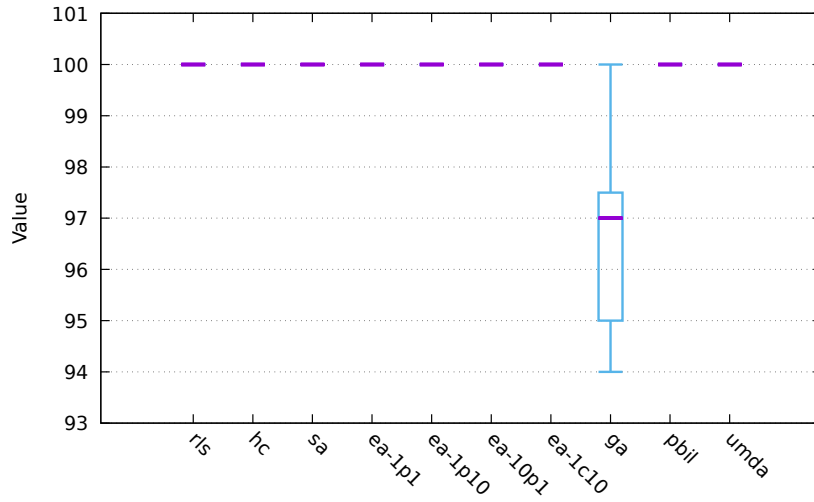


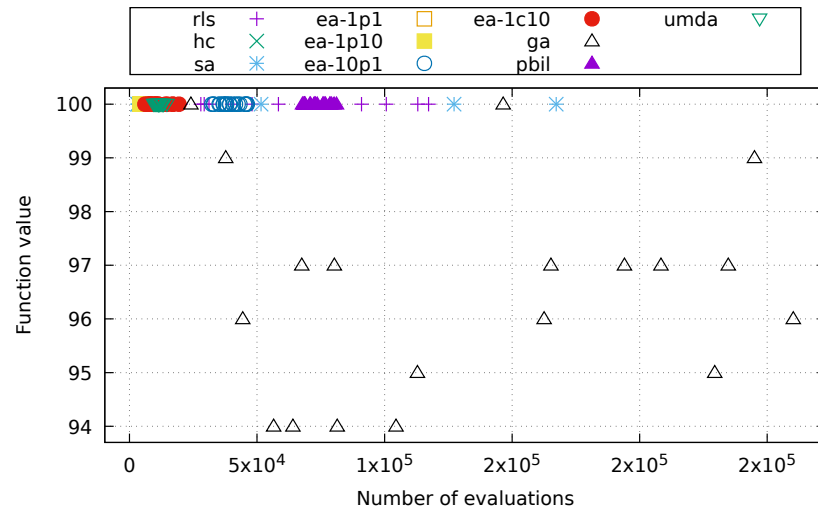


4 Function leading-ones

| Algorithm | Value | | | | |
|-----------|------------|------------|------------|------------|------------|
| | min | Q_1 | med. | Q_3 | max |
| rls | 100 | 100 | 100 | 100 | 100 |
| hc | 100 | 100 | 100 | 100 | 100 |
| sa | 100 | 100 | 100 | 100 | 100 |
| ea-1p1 | 100 | 100 | 100 | 100 | 100 |
| ea-1p10 | 100 | 100 | 100 | 100 | 100 |
| ea-10p1 | 100 | 100 | 100 | 100 | 100 |
| ea-1c10 | 100 | 100 | 100 | 100 | 100 |
| pbil | 100 | 100 | 100 | 100 | 100 |
| umda | 100 | 100 | 100 | 100 | 100 |
| ga | 94 | 95 | 97 | 98 | 100 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| hc | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ea-1p10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ea-1p1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ea-1c10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
| sa | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 |
| rls | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 |
| ea-10p1 | 0.02 | 0.00 | 0.02 | 0.00 | 0.04 | 0.01 |
| umda | 0.03 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 |
| pbil | 0.18 | 0.01 | 0.03 | 0.00 | 0.21 | 0.01 |
| ga | 0.54 | 0.17 | 0.11 | 0.03 | 0.64 | 0.20 |

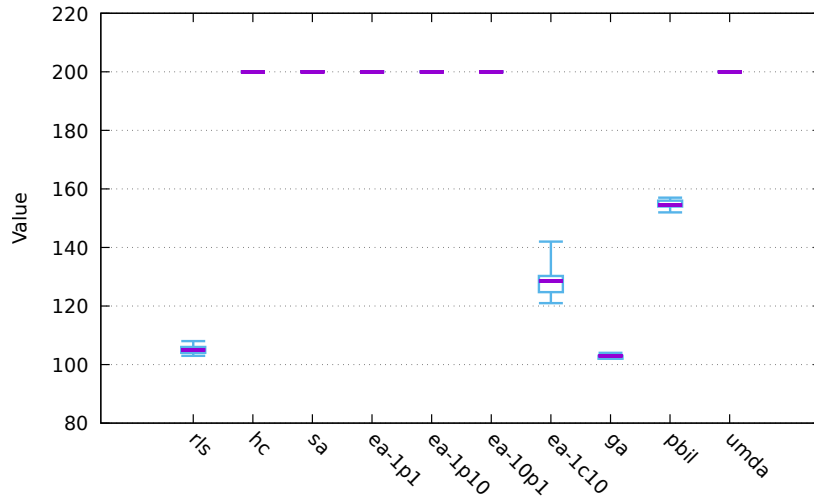


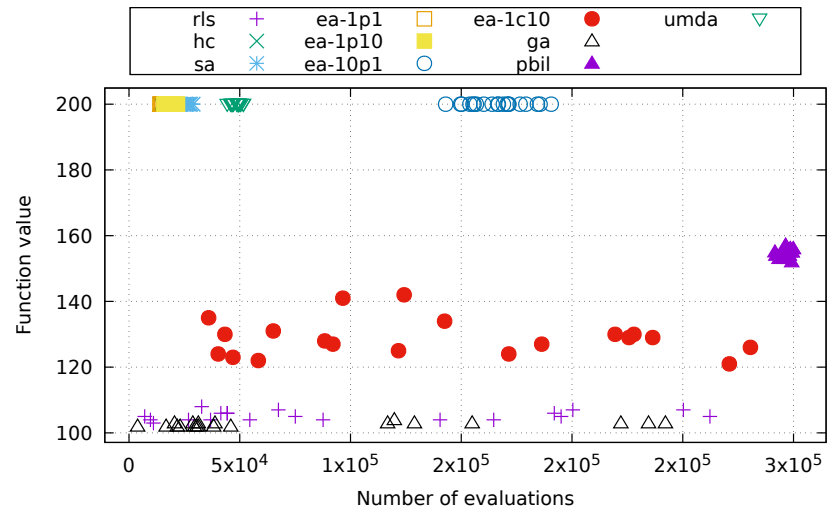


5 Function ridge

| Algorithm | Value | | | | |
|-----------|------------|------------|------------|------------|------------|
| | min | Q_1 | med. | Q_3 | max |
| hc | 200 | 200 | 200 | 200 | 200 |
| sa | 200 | 200 | 200 | 200 | 200 |
| ea-1p1 | 200 | 200 | 200 | 200 | 200 |
| ea-1p10 | 200 | 200 | 200 | 200 | 200 |
| ea-10p1 | 200 | 200 | 200 | 200 | 200 |
| umda | 200 | 200 | 200 | 200 | 200 |
| pbil | 152 | 154 | 155 | 156 | 157 |
| ea-1c10 | 121 | 125 | 129 | 130 | 142 |
| rls | 103 | 104 | 105 | 106 | 108 |
| ga | 102 | 102 | 103 | 103 | 104 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| hc | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 |
| sa | 0.01 | 0.00 | 0.01 | 0.00 | 0.02 | 0.00 |
| ea-1p10 | 0.01 | 0.00 | 0.01 | 0.00 | 0.02 | 0.00 |
| ea-1p1 | 0.01 | 0.00 | 0.01 | 0.00 | 0.02 | 0.00 |
| ea-10p1 | 0.10 | 0.01 | 0.07 | 0.01 | 0.17 | 0.01 |
| rls | 0.10 | 0.00 | 0.12 | 0.00 | 0.22 | 0.01 |
| umda | 0.11 | 0.00 | 0.02 | 0.00 | 0.13 | 0.01 |
| ea-1c10 | 0.14 | 0.00 | 0.13 | 0.00 | 0.26 | 0.00 |
| ga | 0.61 | 0.00 | 0.12 | 0.00 | 0.73 | 0.00 |
| pbil | 0.66 | 0.00 | 0.13 | 0.00 | 0.79 | 0.00 |

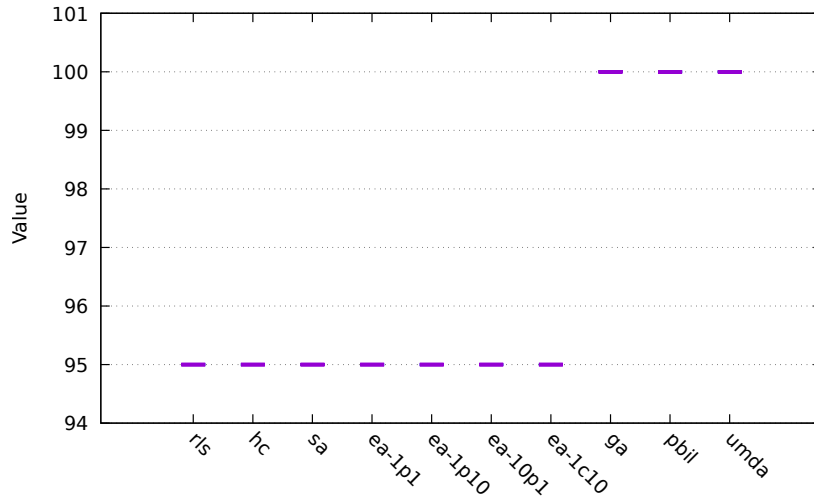


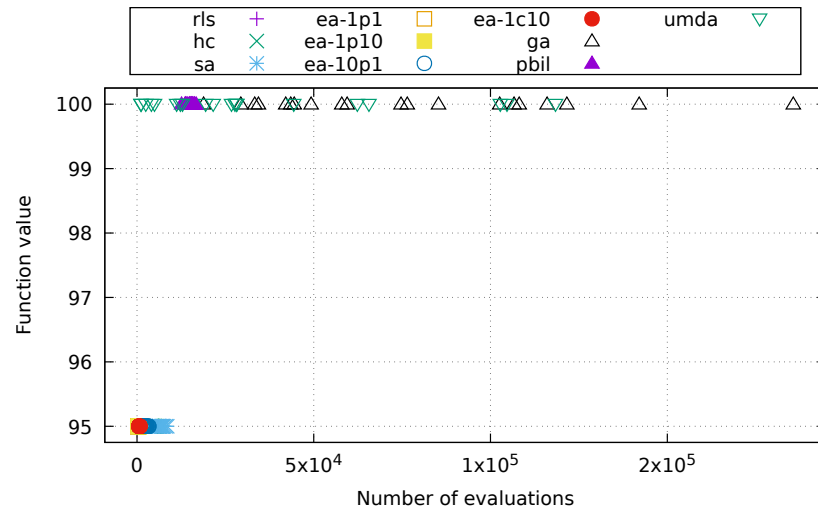


6 Function jmp-5

| Algorithm | Value | | | | |
|-----------|------------|------------|------------|------------|------------|
| | min | Q_1 | med. | Q_3 | max |
| ga | 100 | 100 | 100 | 100 | 100 |
| pbil | 100 | 100 | 100 | 100 | 100 |
| umda | 100 | 100 | 100 | 100 | 100 |
| rls | 95 | 95 | 95 | 95 | 95 |
| hc | 95 | 95 | 95 | 95 | 95 |
| sa | 95 | 95 | 95 | 95 | 95 |
| ea-1p1 | 95 | 95 | 95 | 95 | 95 |
| ea-1p10 | 95 | 95 | 95 | 95 | 95 |
| ea-10p1 | 95 | 95 | 95 | 95 | 95 |
| ea-1c10 | 95 | 95 | 95 | 95 | 95 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| pbil | 0.04 | 0.00 | 0.01 | 0.00 | 0.05 | 0.00 |
| umda | 0.08 | 0.08 | 0.01 | 0.01 | 0.09 | 0.10 |
| hc | 0.09 | 0.00 | 0.12 | 0.00 | 0.21 | 0.00 |
| rls | 0.10 | 0.00 | 0.12 | 0.00 | 0.22 | 0.00 |
| sa | 0.11 | 0.00 | 0.12 | 0.00 | 0.22 | 0.00 |
| ea-1c10 | 0.14 | 0.00 | 0.12 | 0.00 | 0.25 | 0.00 |
| ea-1p1 | 0.15 | 0.00 | 0.12 | 0.00 | 0.26 | 0.00 |
| ea-1p10 | 0.15 | 0.00 | 0.12 | 0.00 | 0.27 | 0.00 |
| ga | 0.15 | 0.09 | 0.03 | 0.02 | 0.18 | 0.10 |
| ea-10p1 | 0.18 | 0.00 | 0.12 | 0.00 | 0.30 | 0.00 |

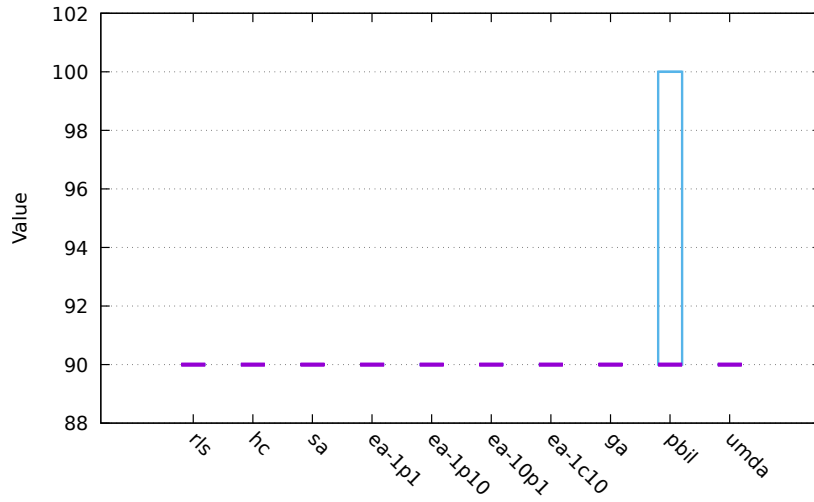


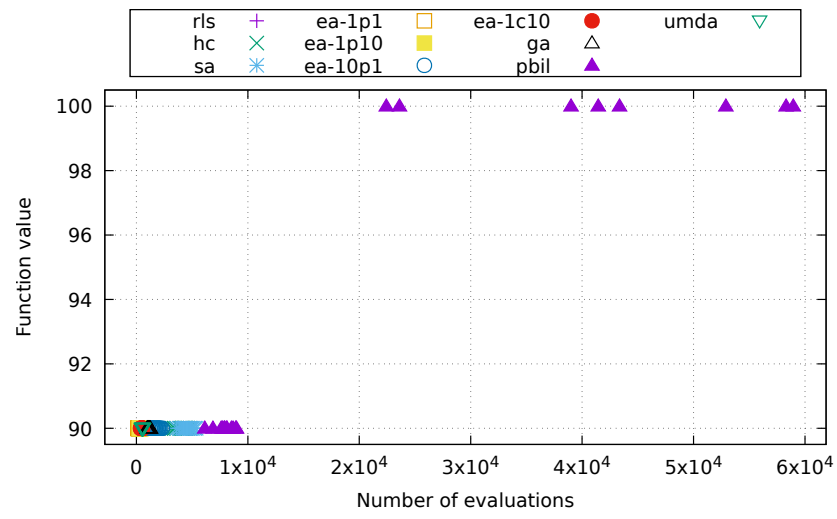


7 Function jmp-10

| Algorithm | Value | | | | |
|-----------|-----------|-----------|-----------|------------|------------|
| | min | Q_1 | med. | Q_3 | max |
| pbil | 90 | 90 | 90 | 100 | 100 |
| rls | 90 | 90 | 90 | 90 | 90 |
| hc | 90 | 90 | 90 | 90 | 90 |
| sa | 90 | 90 | 90 | 90 | 90 |
| ea-1p1 | 90 | 90 | 90 | 90 | 90 |
| ea-1p10 | 90 | 90 | 90 | 90 | 90 |
| ea-10p1 | 90 | 90 | 90 | 90 | 90 |
| ea-1c10 | 90 | 90 | 90 | 90 | 90 |
| ga | 90 | 90 | 90 | 90 | 90 |
| umda | 90 | 90 | 90 | 90 | 90 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| hc | 0.09 | 0.00 | 0.12 | 0.00 | 0.21 | 0.00 |
| rls | 0.11 | 0.00 | 0.12 | 0.00 | 0.22 | 0.00 |
| sa | 0.11 | 0.00 | 0.12 | 0.00 | 0.23 | 0.00 |
| ea-1c10 | 0.14 | 0.00 | 0.12 | 0.00 | 0.25 | 0.01 |
| ea-1p1 | 0.15 | 0.00 | 0.12 | 0.00 | 0.26 | 0.00 |
| ea-1p10 | 0.15 | 0.00 | 0.12 | 0.00 | 0.27 | 0.00 |
| ea-10p1 | 0.19 | 0.00 | 0.12 | 0.00 | 0.30 | 0.00 |
| pbil | 0.47 | 0.30 | 0.08 | 0.05 | 0.54 | 0.35 |
| ga | 0.61 | 0.00 | 0.12 | 0.00 | 0.72 | 0.00 |
| umda | 0.68 | 0.00 | 0.12 | 0.00 | 0.80 | 0.00 |

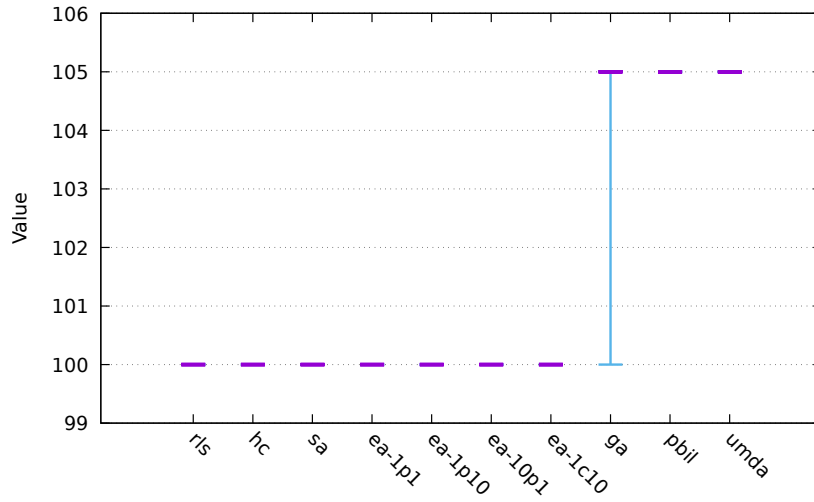


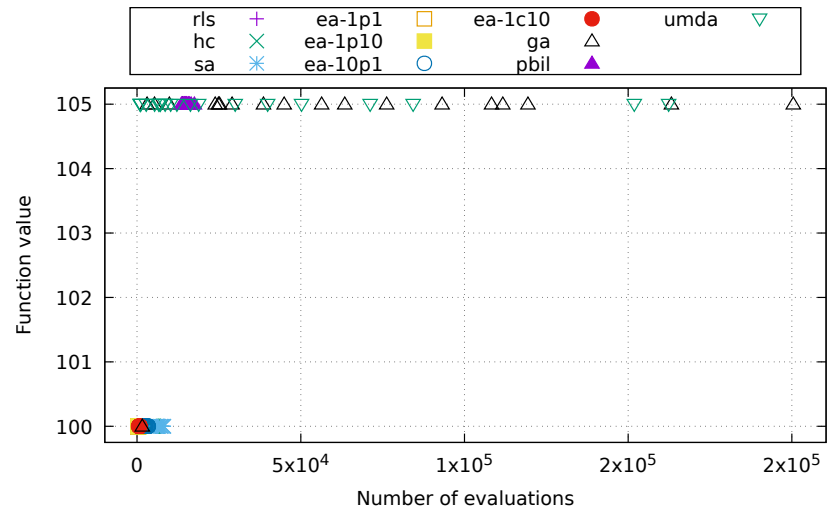


8 Function djmp-5

| Algorithm | Value | | | | |
|-----------|------------|------------|------------|------------|------------|
| | min | Q_1 | med. | Q_3 | max |
| pbil | 105 | 105 | 105 | 105 | 105 |
| umda | 105 | 105 | 105 | 105 | 105 |
| ga | 100 | 105 | 105 | 105 | 105 |
| rls | 100 | 100 | 100 | 100 | 100 |
| hc | 100 | 100 | 100 | 100 | 100 |
| sa | 100 | 100 | 100 | 100 | 100 |
| ea-1p1 | 100 | 100 | 100 | 100 | 100 |
| ea-1p10 | 100 | 100 | 100 | 100 | 100 |
| ea-10p1 | 100 | 100 | 100 | 100 | 100 |
| ea-1c10 | 100 | 100 | 100 | 100 | 100 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| pbil | 0.04 | 0.00 | 0.01 | 0.00 | 0.05 | 0.00 |
| umda | 0.08 | 0.11 | 0.01 | 0.02 | 0.09 | 0.13 |
| hc | 0.09 | 0.00 | 0.12 | 0.00 | 0.21 | 0.00 |
| rls | 0.10 | 0.00 | 0.12 | 0.00 | 0.22 | 0.01 |
| sa | 0.11 | 0.00 | 0.12 | 0.00 | 0.23 | 0.00 |
| ea-1c10 | 0.14 | 0.00 | 0.12 | 0.00 | 0.25 | 0.00 |
| ea-1p1 | 0.15 | 0.00 | 0.12 | 0.00 | 0.26 | 0.00 |
| ga | 0.15 | 0.15 | 0.03 | 0.03 | 0.18 | 0.18 |
| ea-1p10 | 0.15 | 0.00 | 0.12 | 0.00 | 0.27 | 0.00 |
| ea-10p1 | 0.19 | 0.00 | 0.12 | 0.00 | 0.30 | 0.00 |

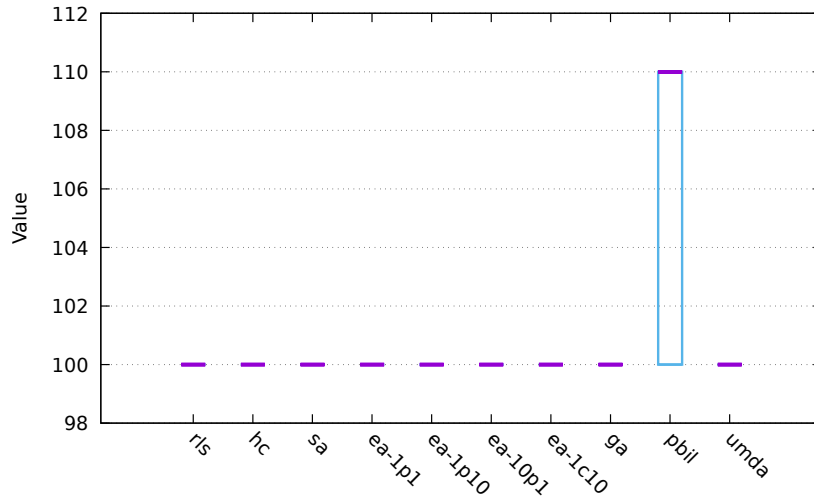


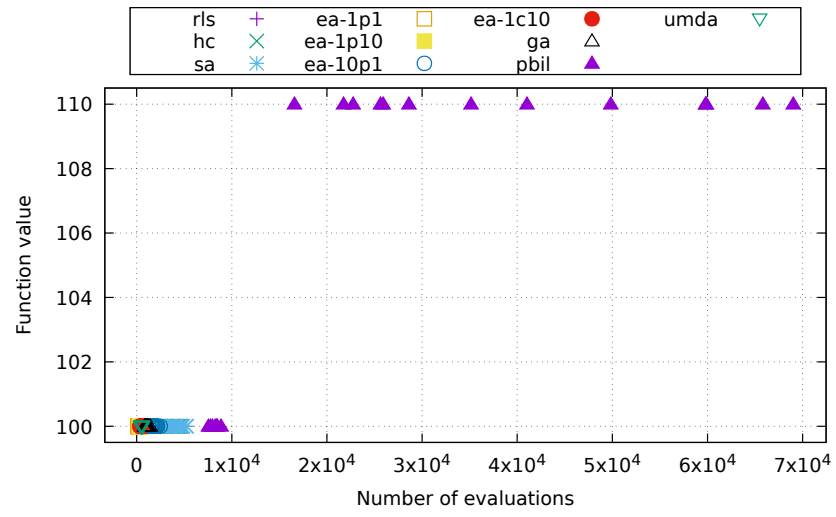


9 Function djmp-10

| Algorithm | Value | | | | |
|-----------|------------|------------|------------|------------|------------|
| | min | Q_1 | med. | Q_3 | max |
| pbil | 100 | 100 | 110 | 110 | 110 |
| rls | 100 | 100 | 100 | 100 | 100 |
| hc | 100 | 100 | 100 | 100 | 100 |
| sa | 100 | 100 | 100 | 100 | 100 |
| ea-1p1 | 100 | 100 | 100 | 100 | 100 |
| ea-1p10 | 100 | 100 | 100 | 100 | 100 |
| ea-10p1 | 100 | 100 | 100 | 100 | 100 |
| ea-1c10 | 100 | 100 | 100 | 100 | 100 |
| ga | 100 | 100 | 100 | 100 | 100 |
| umda | 100 | 100 | 100 | 100 | 100 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| hc | 0.09 | 0.00 | 0.12 | 0.00 | 0.21 | 0.00 |
| rls | 0.11 | 0.00 | 0.12 | 0.00 | 0.22 | 0.00 |
| sa | 0.11 | 0.00 | 0.12 | 0.00 | 0.23 | 0.00 |
| ea-1c10 | 0.14 | 0.00 | 0.12 | 0.00 | 0.25 | 0.00 |
| ea-1p1 | 0.15 | 0.00 | 0.12 | 0.00 | 0.27 | 0.00 |
| ea-1p10 | 0.15 | 0.00 | 0.12 | 0.00 | 0.27 | 0.00 |
| ea-10p1 | 0.19 | 0.00 | 0.12 | 0.00 | 0.30 | 0.00 |
| pbil | 0.32 | 0.30 | 0.05 | 0.05 | 0.37 | 0.35 |
| ga | 0.61 | 0.00 | 0.12 | 0.00 | 0.72 | 0.00 |
| umda | 0.68 | 0.00 | 0.12 | 0.00 | 0.80 | 0.00 |

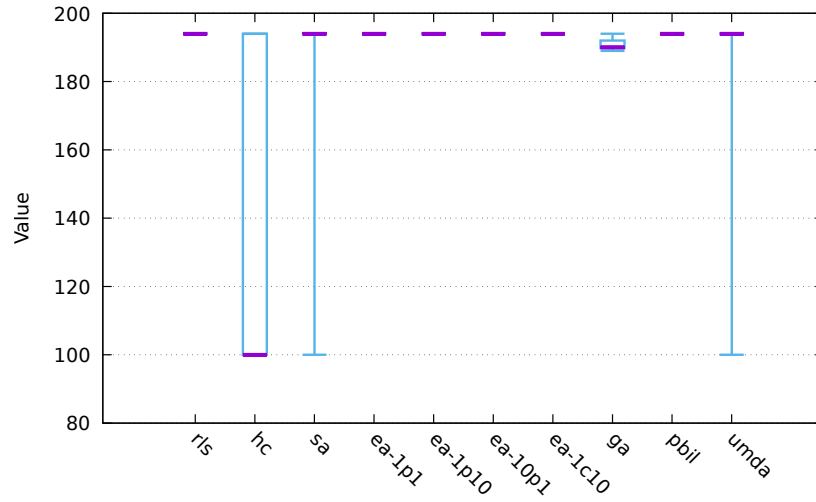


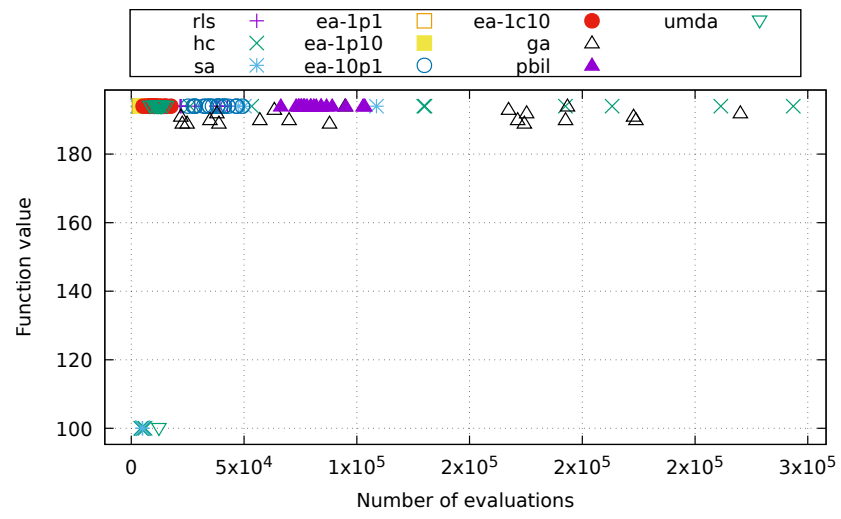


10 Function fp-5

| Algorithm | Value | | | | |
|-----------|------------|------------|------------|------------|------------|
| | min | Q_1 | med. | Q_3 | max |
| rls | 194 | 194 | 194 | 194 | 194 |
| ea-1p1 | 194 | 194 | 194 | 194 | 194 |
| ea-1p10 | 194 | 194 | 194 | 194 | 194 |
| ea-10p1 | 194 | 194 | 194 | 194 | 194 |
| ea-1c10 | 194 | 194 | 194 | 194 | 194 |
| pbil | 194 | 194 | 194 | 194 | 194 |
| sa | 100 | 194 | 194 | 194 | 194 |
| umda | 100 | 194 | 194 | 194 | 194 |
| ga | 189 | 190 | 190 | 192 | 194 |
| hc | 100 | 100 | 100 | 194 | 194 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| ea-1p10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ea-1p1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ea-1c10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
| rls | 0.01 | 0.00 | 0.01 | 0.00 | 0.01 | 0.01 |
| sa | 0.01 | 0.03 | 0.02 | 0.03 | 0.03 | 0.06 |
| ea-10p1 | 0.02 | 0.00 | 0.02 | 0.00 | 0.04 | 0.01 |
| umda | 0.06 | 0.14 | 0.01 | 0.03 | 0.07 | 0.17 |
| hc | 0.07 | 0.03 | 0.09 | 0.04 | 0.16 | 0.07 |
| pbil | 0.20 | 0.02 | 0.03 | 0.00 | 0.24 | 0.02 |
| ga | 0.58 | 0.10 | 0.12 | 0.02 | 0.70 | 0.12 |

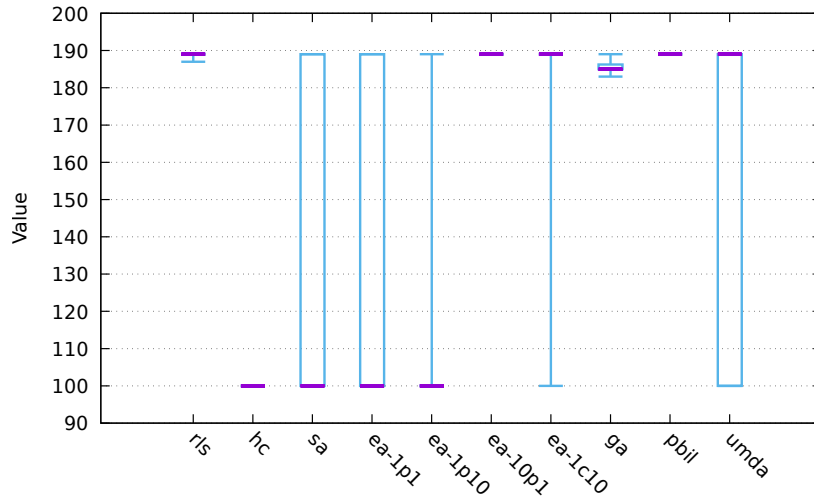


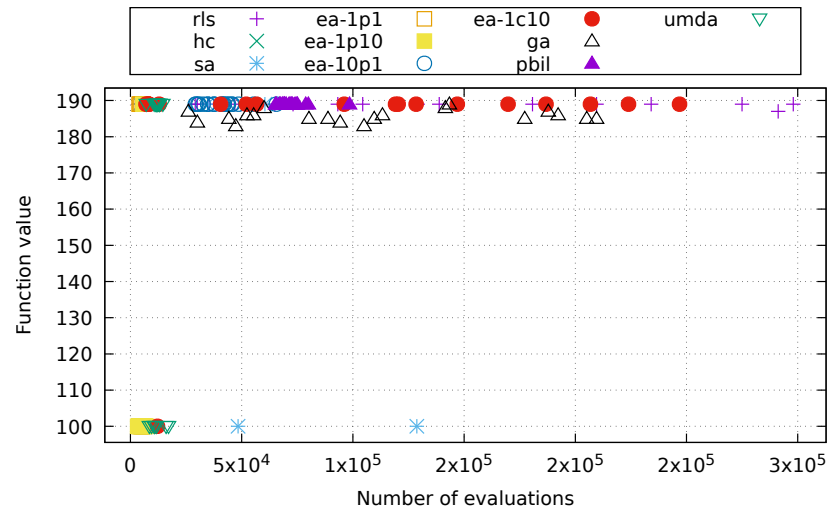


11 Function fp-10

| Algorithm | Value | | | | |
|-----------|------------|------------|------------|------------|------------|
| | min | Q_1 | med. | Q_3 | max |
| ea-10p1 | 189 | 189 | 189 | 189 | 189 |
| pbil | 189 | 189 | 189 | 189 | 189 |
| rls | 187 | 189 | 189 | 189 | 189 |
| ea-1c10 | 100 | 189 | 189 | 189 | 189 |
| umda | 100 | 100 | 189 | 189 | 189 |
| ga | 183 | 185 | 185 | 186 | 189 |
| sa | 100 | 100 | 100 | 189 | 189 |
| ea-1p1 | 100 | 100 | 100 | 189 | 189 |
| ea-1p10 | 100 | 100 | 100 | 100 | 189 |
| hc | 100 | 100 | 100 | 100 | 100 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| ea-10p1 | 0.02 | 0.01 | 0.02 | 0.00 | 0.04 | 0.01 |
| rls | 0.04 | 0.03 | 0.05 | 0.04 | 0.08 | 0.07 |
| ea-1c10 | 0.05 | 0.04 | 0.04 | 0.04 | 0.09 | 0.08 |
| sa | 0.07 | 0.05 | 0.09 | 0.06 | 0.16 | 0.10 |
| hc | 0.09 | 0.00 | 0.12 | 0.00 | 0.21 | 0.00 |
| ea-1p1 | 0.10 | 0.07 | 0.08 | 0.06 | 0.18 | 0.13 |
| ea-1p10 | 0.15 | 0.03 | 0.12 | 0.03 | 0.26 | 0.06 |
| pbil | 0.18 | 0.02 | 0.03 | 0.00 | 0.21 | 0.02 |
| umda | 0.25 | 0.31 | 0.05 | 0.06 | 0.29 | 0.37 |
| ga | 0.60 | 0.07 | 0.12 | 0.01 | 0.72 | 0.09 |

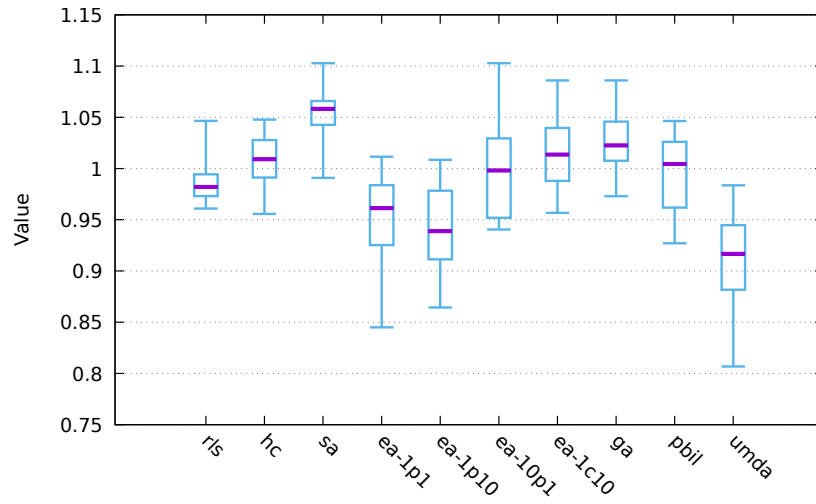


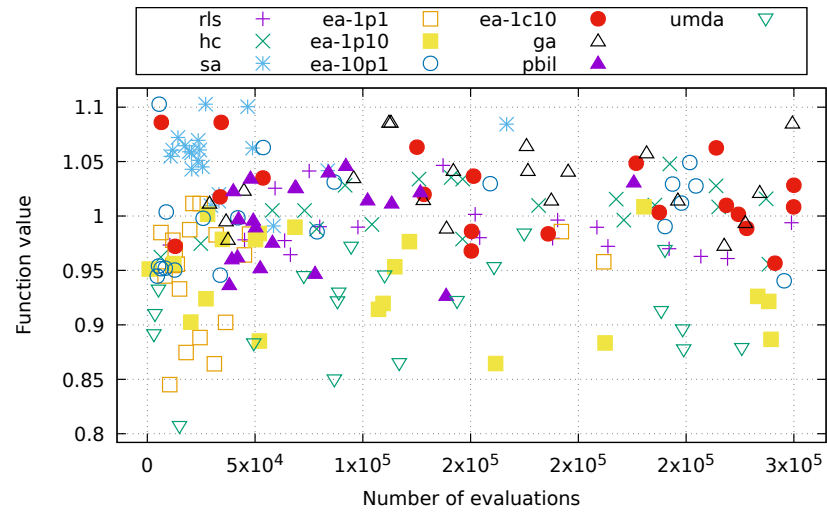


12 Function nk

| Algorithm | Value | | | | |
|-----------|-------------|-------------|-------------|-------------|-------------|
| | min | Q_1 | med. | Q_3 | max |
| sa | 0.99 | 1.04 | 1.06 | 1.07 | 1.10 |
| ga | 0.97 | 1.01 | 1.02 | 1.05 | 1.09 |
| ea-1c10 | 0.96 | 0.99 | 1.01 | 1.04 | 1.09 |
| hc | 0.96 | 0.99 | 1.01 | 1.03 | 1.05 |
| pbil | 0.93 | 0.96 | 1.00 | 1.03 | 1.05 |
| ea-10p1 | 0.94 | 0.95 | 1.00 | 1.03 | 1.10 |
| rls | 0.96 | 0.97 | 0.98 | 0.99 | 1.05 |
| ea-1p1 | 0.85 | 0.93 | 0.96 | 0.98 | 1.01 |
| ea-1p10 | 0.86 | 0.91 | 0.94 | 0.98 | 1.01 |
| umda | 0.81 | 0.88 | 0.92 | 0.94 | 0.98 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| hc | 0.09 | 0.00 | 0.43 | 0.00 | 0.52 | 0.00 |
| rls | 0.10 | 0.00 | 0.44 | 0.00 | 0.54 | 0.01 |
| sa | 0.11 | 0.00 | 0.41 | 0.00 | 0.51 | 0.00 |
| ea-1c10 | 0.13 | 0.00 | 0.41 | 0.00 | 0.54 | 0.00 |
| ea-1p1 | 0.15 | 0.00 | 0.44 | 0.01 | 0.58 | 0.01 |
| ea-1p10 | 0.15 | 0.00 | 0.44 | 0.01 | 0.59 | 0.01 |
| ea-10p1 | 0.18 | 0.00 | 0.46 | 0.01 | 0.64 | 0.01 |
| ga | 0.60 | 0.00 | 0.51 | 0.01 | 1.12 | 0.01 |
| umda | 0.65 | 0.00 | 0.41 | 0.01 | 1.06 | 0.01 |
| pbil | 0.67 | 0.00 | 0.46 | 0.00 | 1.13 | 0.00 |

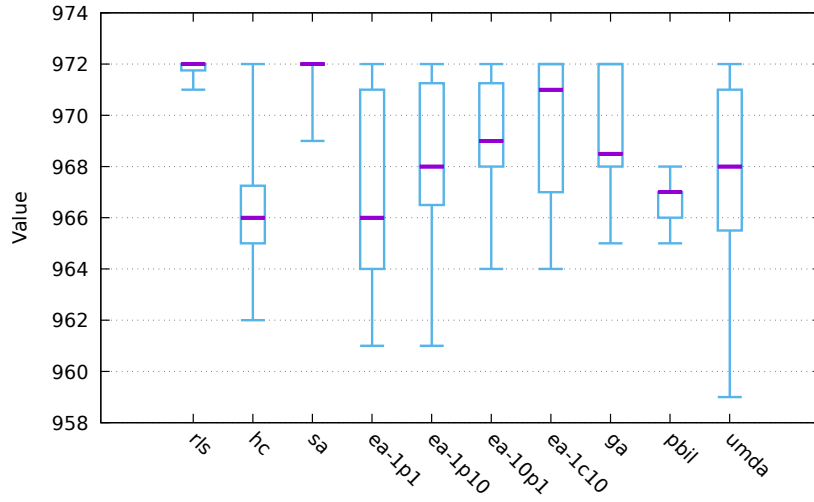


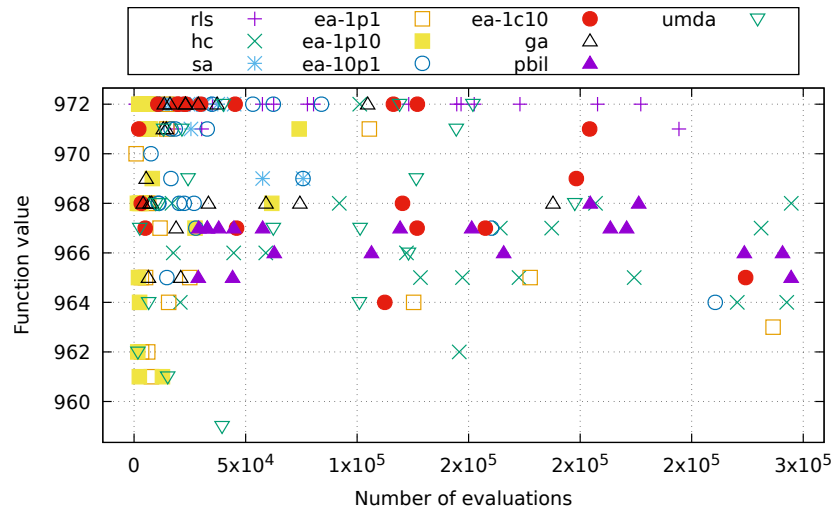


13 Function max-sat

| Algorithm | Value | | | | |
|-----------|------------|------------|------------|------------|------------|
| | min | Q_1 | med. | Q_3 | max |
| sa | 969 | 972 | 972 | 972 | 972 |
| rls | 971 | 972 | 972 | 972 | 972 |
| ea-1c10 | 964 | 967 | 971 | 972 | 972 |
| ea-10p1 | 964 | 968 | 969 | 971 | 972 |
| ga | 965 | 968 | 969 | 972 | 972 |
| ea-1p10 | 961 | 967 | 968 | 971 | 972 |
| umda | 959 | 966 | 968 | 971 | 972 |
| pbil | 965 | 966 | 967 | 967 | 968 |
| ea-1p1 | 961 | 964 | 966 | 971 | 972 |
| hc | 962 | 965 | 966 | 967 | 972 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| hc | 0.08 | 0.00 | 1.78 | 0.01 | 1.86 | 0.01 |
| rls | 0.10 | 0.00 | 1.82 | 0.01 | 1.92 | 0.01 |
| sa | 0.10 | 0.00 | 1.65 | 0.02 | 1.76 | 0.02 |
| ea-1c10 | 0.13 | 0.00 | 1.64 | 0.03 | 1.77 | 0.03 |
| ea-1p1 | 0.15 | 0.00 | 1.80 | 0.04 | 1.95 | 0.04 |
| ea-1p10 | 0.15 | 0.00 | 1.79 | 0.04 | 1.94 | 0.04 |
| ea-10p1 | 0.18 | 0.00 | 2.10 | 0.05 | 2.28 | 0.05 |
| ga | 0.59 | 0.01 | 2.27 | 0.04 | 2.86 | 0.04 |
| umda | 0.66 | 0.01 | 1.65 | 0.03 | 2.31 | 0.03 |
| pbil | 0.68 | 0.00 | 1.84 | 0.02 | 2.52 | 0.02 |

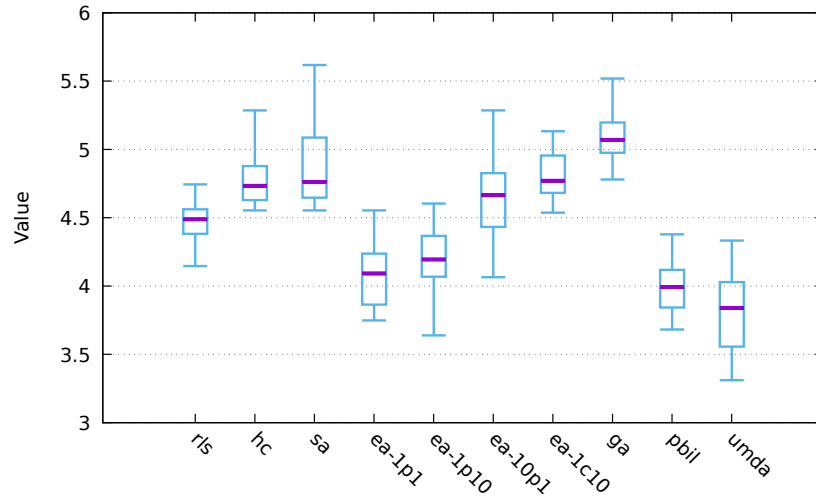


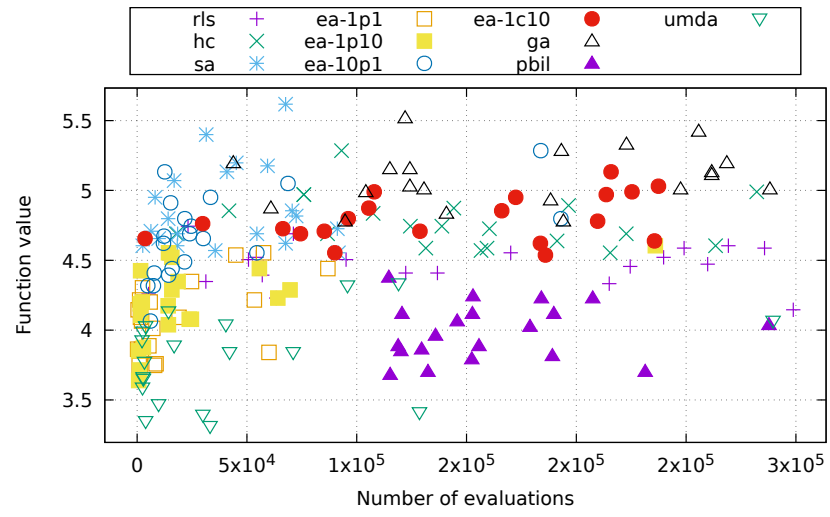


14 Function labs

| Algorithm | Value | | | | |
|-----------|-------------|-------------|-------------|-------------|-------------|
| | min | Q_1 | med. | Q_3 | max |
| ga | 4.78 | 4.98 | 5.07 | 5.20 | 5.52 |
| ea-1c10 | 4.54 | 4.68 | 4.77 | 4.96 | 5.13 |
| sa | 4.55 | 4.65 | 4.76 | 5.09 | 5.62 |
| hc | 4.55 | 4.63 | 4.73 | 4.88 | 5.29 |
| ea-10p1 | 4.07 | 4.43 | 4.66 | 4.83 | 5.29 |
| rls | 4.15 | 4.38 | 4.49 | 4.56 | 4.74 |
| ea-1p10 | 3.64 | 4.07 | 4.19 | 4.37 | 4.60 |
| ea-1p1 | 3.75 | 3.86 | 4.09 | 4.24 | 4.55 |
| pbil | 3.68 | 3.84 | 3.99 | 4.12 | 4.38 |
| umda | 3.31 | 3.56 | 3.84 | 4.03 | 4.33 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| hc | 0.08 | 0.00 | 1.55 | 0.00 | 1.64 | 0.00 |
| rls | 0.10 | 0.00 | 1.52 | 0.06 | 1.62 | 0.06 |
| sa | 0.10 | 0.00 | 1.56 | 0.01 | 1.66 | 0.01 |
| ea-1c10 | 0.13 | 0.00 | 1.54 | 0.01 | 1.67 | 0.01 |
| ea-1p1 | 0.14 | 0.00 | 1.55 | 0.00 | 1.69 | 0.00 |
| ea-1p10 | 0.15 | 0.00 | 1.55 | 0.00 | 1.70 | 0.00 |
| ea-10p1 | 0.18 | 0.00 | 1.55 | 0.00 | 1.73 | 0.00 |
| ga | 0.62 | 0.00 | 1.52 | 0.01 | 2.14 | 0.01 |
| umda | 0.67 | 0.00 | 1.49 | 0.02 | 2.16 | 0.02 |
| pbil | 0.73 | 0.00 | 1.51 | 0.00 | 2.24 | 0.01 |

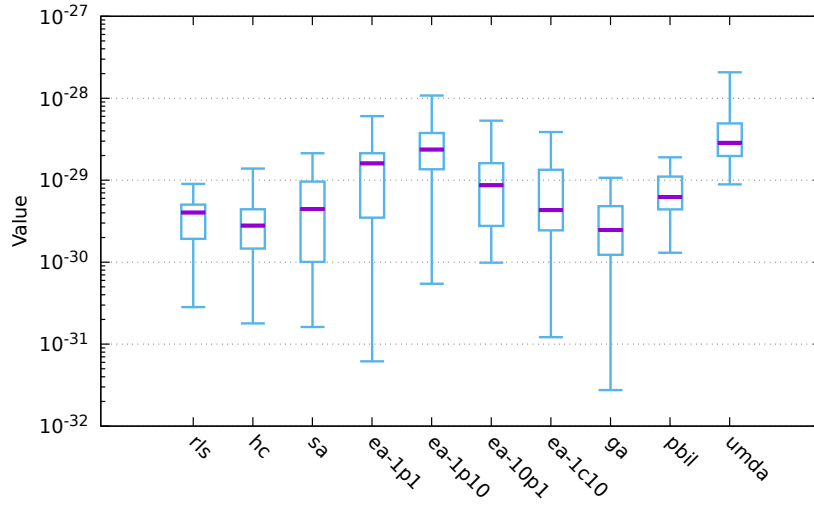


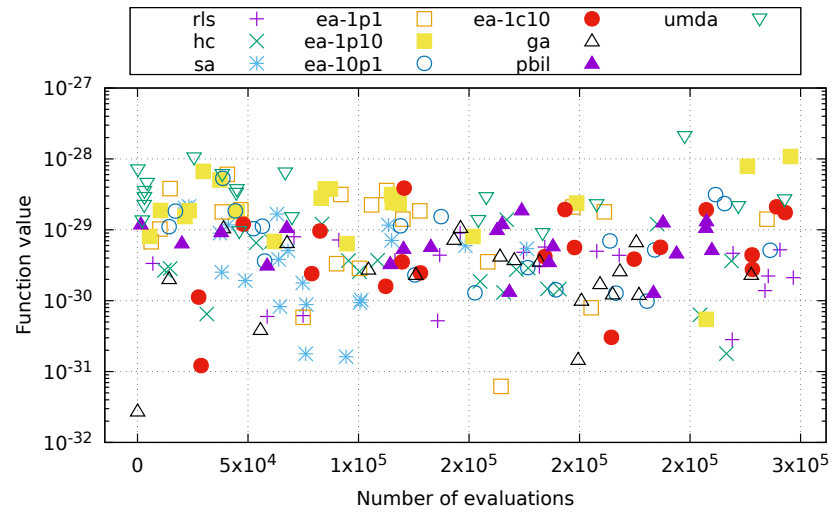


15 Function ep

| Algorithm | Value | | | | |
|-----------|---|---|---|---|---|
| | min | Q_1 | med. | Q_3 | max |
| ga | 2.8×10^{-32} | 1.2×10^{-30} | 2.5×10^{-30} | 4.8×10^{-30} | 1.1×10^{-29} |
| hc | 1.8×10^{-31} | 1.5×10^{-30} | 2.8×10^{-30} | 4.4×10^{-30} | 1.4×10^{-29} |
| rls | 2.8×10^{-31} | 1.9×10^{-30} | 4.0×10^{-30} | 5.0×10^{-30} | 9.0×10^{-30} |
| ea-1c10 | 1.2×10^{-31} | 2.4×10^{-30} | 4.3×10^{-30} | 1.3×10^{-29} | 3.9×10^{-29} |
| sa | 1.6×10^{-31} | 1.0×10^{-30} | 4.4×10^{-30} | 9.6×10^{-30} | 2.1×10^{-29} |
| pbil | 1.3×10^{-30} | 4.4×10^{-30} | 6.2×10^{-30} | 1.1×10^{-29} | 1.9×10^{-29} |
| ea-10p1 | 9.9×10^{-31} | 2.8×10^{-30} | 8.7×10^{-30} | 1.6×10^{-29} | 5.3×10^{-29} |
| ea-1p1 | 6.2×10^{-32} | 3.5×10^{-30} | 1.6×10^{-29} | 2.1×10^{-29} | 6.0×10^{-29} |
| ea-1p10 | 5.5×10^{-31} | 1.4×10^{-29} | 2.4×10^{-29} | 3.8×10^{-29} | 1.1×10^{-28} |
| umda | 8.9×10^{-30} | 2.0×10^{-29} | 2.9×10^{-29} | 4.9×10^{-29} | 2.1×10^{-28} |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| hc | 0.09 | 0.00 | 0.16 | 0.00 | 0.25 | 0.00 |
| sa | 0.10 | 0.00 | 0.16 | 0.00 | 0.26 | 0.00 |
| rls | 0.11 | 0.00 | 0.17 | 0.00 | 0.28 | 0.00 |
| ea-1c10 | 0.13 | 0.00 | 0.16 | 0.00 | 0.29 | 0.00 |
| ea-1p1 | 0.14 | 0.00 | 0.16 | 0.00 | 0.30 | 0.00 |
| ea-1p10 | 0.15 | 0.00 | 0.16 | 0.00 | 0.31 | 0.00 |
| ea-10p1 | 0.18 | 0.00 | 0.18 | 0.00 | 0.35 | 0.00 |
| ga | 0.61 | 0.00 | 0.20 | 0.00 | 0.81 | 0.00 |
| umda | 0.66 | 0.00 | 0.16 | 0.00 | 0.82 | 0.00 |
| pbil | 0.77 | 0.01 | 0.22 | 0.00 | 0.98 | 0.01 |

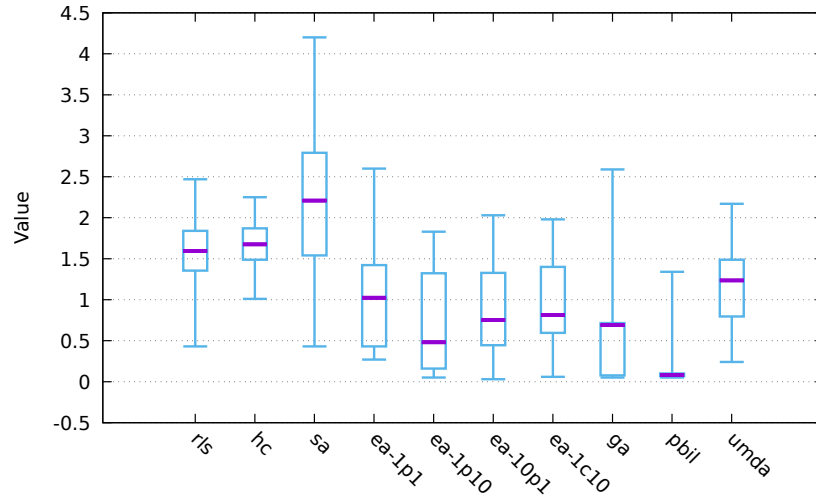


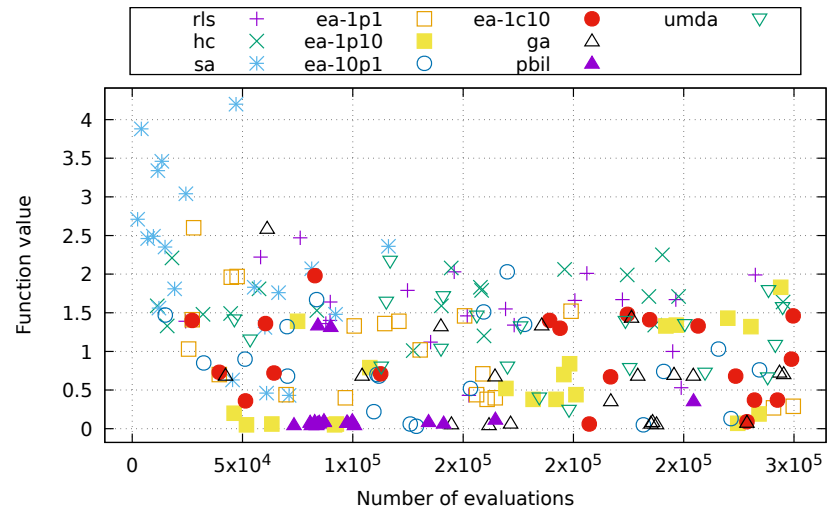


16 Function cancel

| Algorithm | Value | | | | |
|-----------|-------------|-------------|-------------|-------------|-------------|
| | min | Q_1 | med. | Q_3 | max |
| pbil | 0.05 | 0.07 | 0.08 | 0.10 | 1.34 |
| ea-1p10 | 0.05 | 0.16 | 0.48 | 1.32 | 1.83 |
| ga | 0.05 | 0.08 | 0.69 | 0.72 | 2.59 |
| ea-10p1 | 0.03 | 0.45 | 0.75 | 1.33 | 2.03 |
| ea-1c10 | 0.06 | 0.60 | 0.82 | 1.40 | 1.98 |
| ea-1p1 | 0.27 | 0.43 | 1.03 | 1.42 | 2.60 |
| umda | 0.24 | 0.80 | 1.24 | 1.49 | 2.17 |
| rls | 0.43 | 1.36 | 1.60 | 1.84 | 2.47 |
| hc | 1.01 | 1.49 | 1.68 | 1.87 | 2.25 |
| sa | 0.43 | 1.54 | 2.21 | 2.79 | 4.20 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| hc | 0.08 | 0.00 | 0.15 | 0.00 | 0.23 | 0.00 |
| rls | 0.10 | 0.00 | 0.15 | 0.00 | 0.24 | 0.01 |
| sa | 0.10 | 0.00 | 0.15 | 0.00 | 0.25 | 0.00 |
| ea-1c10 | 0.13 | 0.00 | 0.15 | 0.00 | 0.28 | 0.00 |
| ea-1p1 | 0.14 | 0.00 | 0.15 | 0.00 | 0.29 | 0.00 |
| ea-1p10 | 0.15 | 0.00 | 0.15 | 0.00 | 0.30 | 0.00 |
| ea-10p1 | 0.18 | 0.00 | 0.15 | 0.00 | 0.33 | 0.00 |
| ga | 0.61 | 0.00 | 0.15 | 0.00 | 0.76 | 0.00 |
| umda | 0.65 | 0.00 | 0.14 | 0.00 | 0.79 | 0.00 |
| pbil | 0.69 | 0.00 | 0.15 | 0.00 | 0.84 | 0.00 |

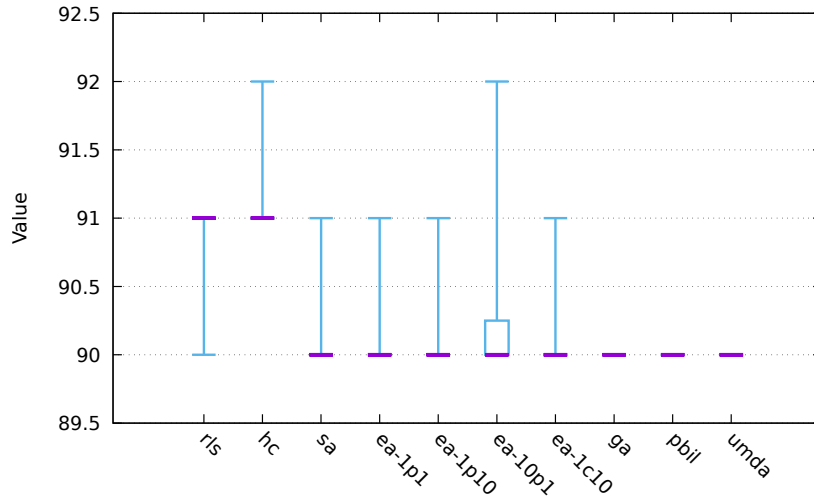


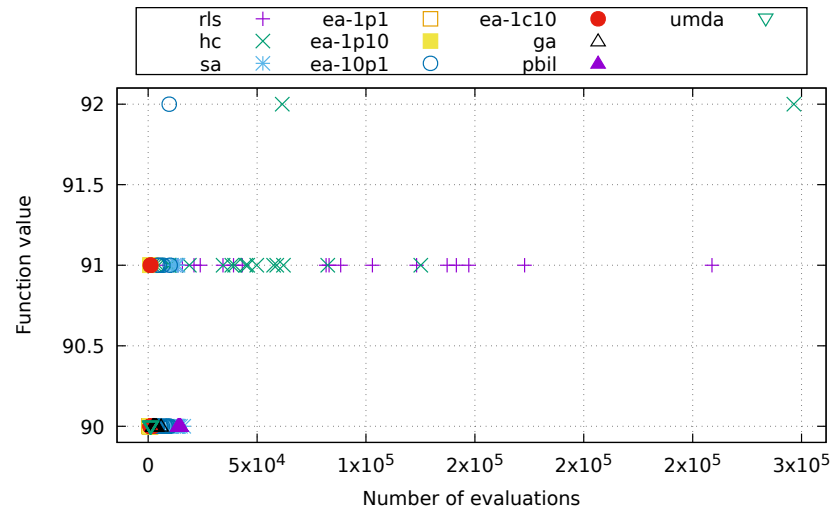


17 Function trap

| Algorithm | Value | | | | |
|-----------|-----------|-----------|-----------|-----------|-----------|
| | min | Q_1 | med. | Q_3 | max |
| hc | 91 | 91 | 91 | 91 | 92 |
| rls | 90 | 91 | 91 | 91 | 91 |
| ea-10p1 | 90 | 90 | 90 | 90 | 92 |
| sa | 90 | 90 | 90 | 90 | 91 |
| ea-1p1 | 90 | 90 | 90 | 90 | 91 |
| ea-1p10 | 90 | 90 | 90 | 90 | 91 |
| ea-1c10 | 90 | 90 | 90 | 90 | 91 |
| ga | 90 | 90 | 90 | 90 | 90 |
| pbil | 90 | 90 | 90 | 90 | 90 |
| umda | 90 | 90 | 90 | 90 | 90 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| hc | 0.09 | 0.00 | 0.14 | 0.00 | 0.24 | 0.00 |
| rls | 0.10 | 0.00 | 0.14 | 0.00 | 0.24 | 0.01 |
| sa | 0.11 | 0.00 | 0.14 | 0.00 | 0.25 | 0.00 |
| ea-1c10 | 0.14 | 0.00 | 0.14 | 0.00 | 0.28 | 0.00 |
| ea-1p1 | 0.15 | 0.00 | 0.14 | 0.00 | 0.29 | 0.00 |
| ea-1p10 | 0.16 | 0.00 | 0.14 | 0.00 | 0.29 | 0.00 |
| ea-10p1 | 0.19 | 0.00 | 0.14 | 0.00 | 0.33 | 0.00 |
| ga | 0.62 | 0.00 | 0.13 | 0.00 | 0.75 | 0.00 |
| umda | 0.66 | 0.01 | 0.13 | 0.00 | 0.80 | 0.01 |
| pbil | 0.67 | 0.00 | 0.13 | 0.00 | 0.81 | 0.00 |

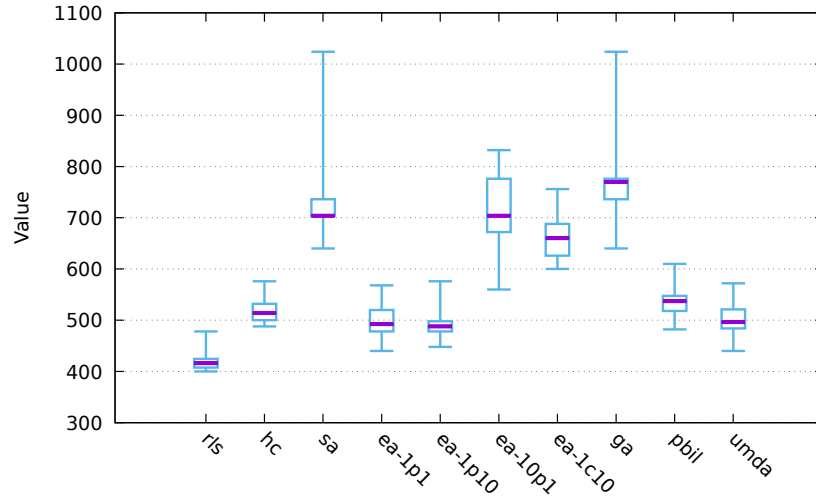


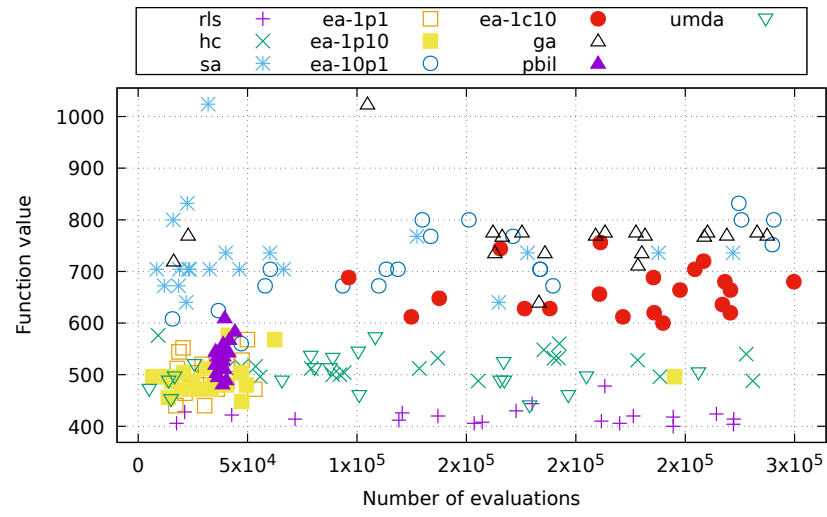


18 Function hiff

| Algorithm | Value | | | | |
|-----------|------------|------------|------------|------------|--------------|
| | min | Q_1 | med. | Q_3 | max |
| ga | 640 | 736 | 770 | 776 | 1,024 |
| ea-10p1 | 560 | 672 | 704 | 776 | 832 |
| sa | 640 | 704 | 704 | 736 | 1,024 |
| ea-1c10 | 600 | 626 | 660 | 688 | 756 |
| pbil | 482 | 518 | 537 | 548 | 610 |
| hc | 488 | 500 | 514 | 532 | 576 |
| umda | 440 | 484 | 496 | 521 | 572 |
| ea-1p1 | 440 | 478 | 492 | 520 | 568 |
| ea-1p10 | 448 | 478 | 488 | 498 | 576 |
| rls | 400 | 408 | 416 | 425 | 478 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| hc | 0.09 | 0.00 | 0.32 | 0.00 | 0.41 | 0.00 |
| sa | 0.10 | 0.02 | 0.35 | 0.07 | 0.45 | 0.09 |
| rls | 0.11 | 0.00 | 0.33 | 0.01 | 0.43 | 0.01 |
| ea-1c10 | 0.14 | 0.00 | 0.36 | 0.00 | 0.50 | 0.00 |
| ea-1p1 | 0.15 | 0.00 | 0.35 | 0.01 | 0.50 | 0.01 |
| ea-1p10 | 0.16 | 0.00 | 0.35 | 0.01 | 0.50 | 0.01 |
| ea-10p1 | 0.19 | 0.00 | 0.39 | 0.01 | 0.58 | 0.01 |
| ga | 0.69 | 0.10 | 0.39 | 0.06 | 1.08 | 0.16 |
| umda | 0.82 | 0.00 | 0.35 | 0.01 | 1.16 | 0.01 |
| pbil | 0.84 | 0.00 | 0.37 | 0.00 | 1.21 | 0.01 |

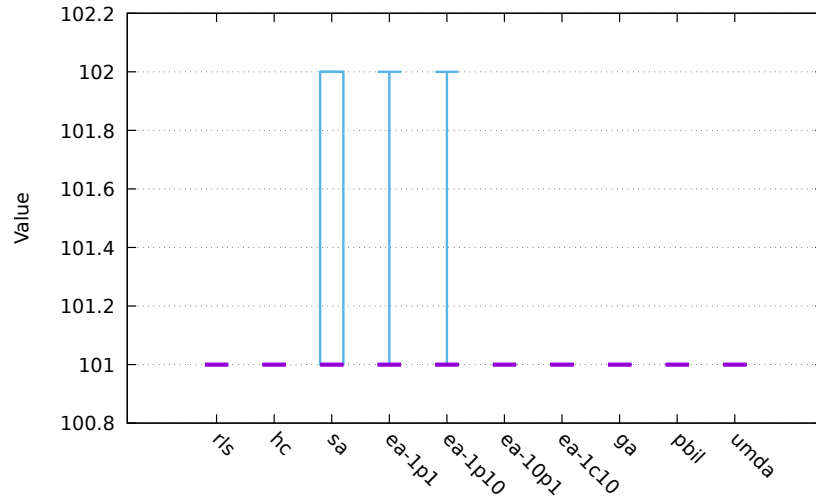


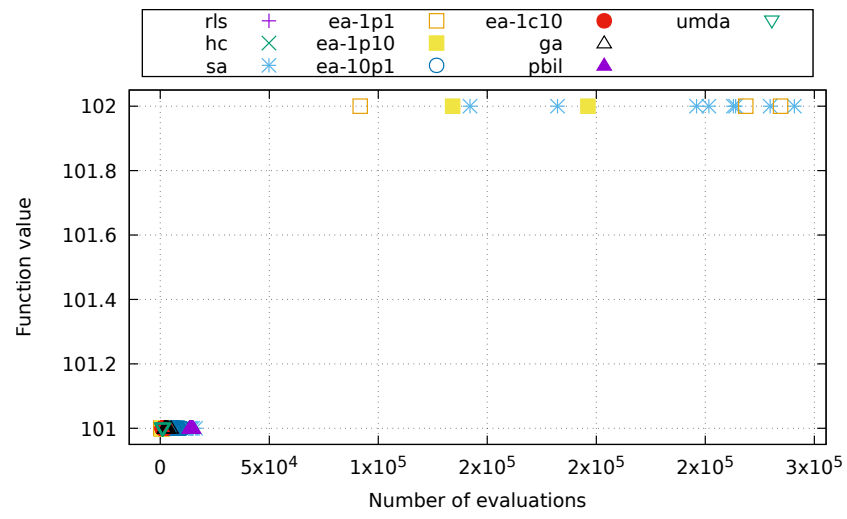


19 Function plateau

| Algorithm | Value | | | | |
|-----------|------------|------------|------------|------------|------------|
| | min | Q_1 | med. | Q_3 | max |
| sa | 101 | 101 | 101 | 102 | 102 |
| ea-1p1 | 101 | 101 | 101 | 101 | 102 |
| ea-1p10 | 101 | 101 | 101 | 101 | 102 |
| rls | 101 | 101 | 101 | 101 | 101 |
| hc | 101 | 101 | 101 | 101 | 101 |
| ea-10p1 | 101 | 101 | 101 | 101 | 101 |
| ea-1c10 | 101 | 101 | 101 | 101 | 101 |
| ga | 101 | 101 | 101 | 101 | 101 |
| pbil | 101 | 101 | 101 | 101 | 101 |
| umda | 101 | 101 | 101 | 101 | 101 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| hc | 0.09 | 0.00 | 0.12 | 0.00 | 0.22 | 0.00 |
| sa | 0.10 | 0.02 | 0.12 | 0.02 | 0.22 | 0.03 |
| rls | 0.10 | 0.00 | 0.12 | 0.00 | 0.22 | 0.00 |
| ea-1c10 | 0.14 | 0.00 | 0.13 | 0.00 | 0.27 | 0.00 |
| ea-1p1 | 0.15 | 0.02 | 0.12 | 0.02 | 0.27 | 0.04 |
| ea-1p10 | 0.15 | 0.02 | 0.12 | 0.02 | 0.27 | 0.04 |
| ea-10p1 | 0.19 | 0.00 | 0.13 | 0.00 | 0.31 | 0.00 |
| ga | 0.62 | 0.00 | 0.12 | 0.00 | 0.74 | 0.00 |
| umda | 0.66 | 0.00 | 0.13 | 0.00 | 0.79 | 0.00 |
| pbil | 0.68 | 0.00 | 0.13 | 0.00 | 0.80 | 0.00 |

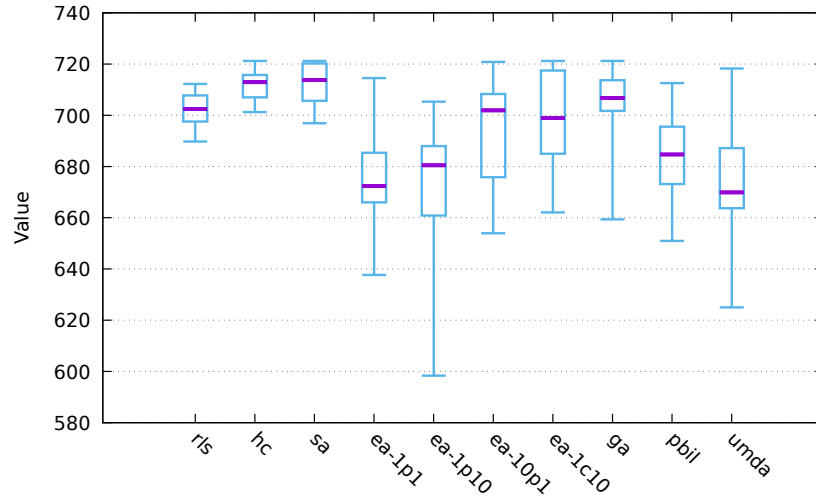


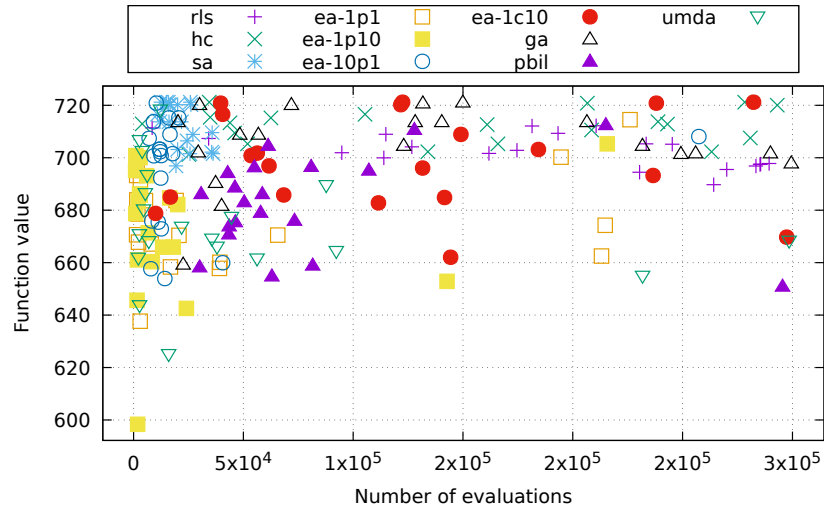


20 Function walsh2

| Algorithm | Value | | | | |
|-----------|---------------|---------------|---------------|---------------|---------------|
| | min | Q_1 | med. | Q_3 | max |
| sa | 696.89 | 705.63 | 713.69 | 720.24 | 721.22 |
| hc | 701.25 | 707.00 | 712.88 | 715.74 | 721.22 |
| ga | 659.35 | 701.72 | 706.79 | 713.69 | 721.22 |
| rls | 689.74 | 697.57 | 702.39 | 707.76 | 712.22 |
| ea-10p1 | 653.95 | 675.80 | 701.92 | 708.31 | 720.85 |
| ea-1c10 | 662.07 | 684.98 | 698.86 | 717.49 | 721.22 |
| pbil | 650.95 | 673.16 | 684.71 | 695.53 | 712.56 |
| ea-1p10 | 598.35 | 660.88 | 680.45 | 687.96 | 705.30 |
| ea-1p1 | 637.68 | 665.99 | 672.47 | 685.36 | 714.52 |
| umda | 625.03 | 663.72 | 669.89 | 687.18 | 718.26 |

| Algorithm | Time (s) | | | | | |
|-----------|-----------|------|------------|------|-------|------|
| | algorithm | | evaluation | | total | |
| | mean | dev. | mean | dev. | mean | dev. |
| hc | 0.08 | 0.00 | 1.92 | 0.01 | 2.00 | 0.01 |
| rls | 0.10 | 0.00 | 1.94 | 0.01 | 2.05 | 0.01 |
| sa | 0.10 | 0.00 | 1.90 | 0.02 | 2.00 | 0.02 |
| ea-1c10 | 0.13 | 0.00 | 1.89 | 0.02 | 2.02 | 0.02 |
| ea-1p1 | 0.15 | 0.00 | 1.98 | 0.02 | 2.13 | 0.02 |
| ea-1p10 | 0.15 | 0.00 | 1.99 | 0.04 | 2.14 | 0.04 |
| ea-10p1 | 0.18 | 0.00 | 2.13 | 0.04 | 2.31 | 0.04 |
| ga | 0.60 | 0.00 | 2.28 | 0.03 | 2.88 | 0.03 |
| umda | 0.61 | 0.05 | 1.75 | 0.15 | 2.36 | 0.21 |
| pbil | 0.68 | 0.00 | 2.00 | 0.02 | 2.68 | 0.02 |





A Plan

```
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  "opt": "--print-results --map 1 --map-random -s 100 --record-evaluation-time",
  "budget": 300000,
  "num_runs": 20,
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        "time": { "before": 1, "after": 2 } }
    },
    {
      "id": "lin",
      "opt": "-F 1 --stop-on-maximum -p instances/lin.100",
      "rounding": {
        "value": { "before": 2, "after": 2 },
        "time": { "before": 1, "after": 2 } }
    },
    {
      "id": "leading-ones",
      "opt": "-F 10 --stop-on-maximum",
      "rounding": {
        "value": { "before": 3, "after": 0 },
        "time": { "before": 1, "after": 2 } }
    },
    {
      "id": "ridge",
      "opt": "-F 11 --stop-on-maximum",
      "rounding": {
        "value": { "before": 3, "after": 0 },
        "time": { "before": 1, "after": 2 } }
    },
    {
      "id": "jmp-5",
      "opt": "-F 30 --stop-on-maximum -t 5",
      "rounding": {
        "value": { "before": 3, "after": 0 },
        "time": { "before": 1, "after": 2 } }
    }
  ],
}
```



```

    "id": "jmp-10",
    "opt": "-F 30 --stop-on-maximum -t 10",
    "rounding": {
        "value": { "before": 3, "after": 0 },
        "time": { "before": 1, "after": 2 } }
},
{
    "id": "djmp-5",
    "opt": "-F 31 --stop-on-maximum -t 5",
    "rounding": {
        "value": { "before": 3, "after": 0 },
        "time": { "before": 1, "after": 2 } }
},
{
    "id": "djmp-10",
    "opt": "-F 31 --stop-on-maximum -t 10",
    "rounding": {
        "value": { "before": 3, "after": 0 },
        "time": { "before": 1, "after": 2 } }
},
{
    "id": "fp-5",
    "opt": "-F 40 --stop-on-maximum -t 5",
    "rounding": {
        "value": { "before": 3, "after": 0 },
        "time": { "before": 1, "after": 2 } }
},
{
    "id": "fp-10",
    "opt": "-F 40 --stop-on-maximum -t 10",
    "rounding": {
        "value": { "before": 3, "after": 0 },
        "time": { "before": 1, "after": 2 } }
},
{
    "id": "nk",
    "opt": "-F 60 -p instances/nk.100.4",
    "rounding": {
        "value": { "before": 1, "after": 2 },
        "time": { "before": 1, "after": 2 } }
},
{
    "id": "max-sat",
    "opt": "-F 70 -p instances/ms.100.3.1000",
    "rounding": {
        "value": { "before": 3, "after": 0 },
        "time": { "before": 1, "after": 2 } }
},
{
    "id": "labs",
    "opt": "-F 81",
    "rounding": {
        "value": { "before": 1, "after": 2 },
        "time": { "before": 1, "after": 2 } }
},
{
    "id": "ep",
    "opt": "-F 90 -p instances/ep.100",
    "reverse": true,
    "logscale": true,
    "rounding": {
        "value": { "before": 1, "after": 1 },
        "time": { "before": 1, "after": 2 } }
}

```

```

},
{
  "id": "cancel",
  "opt": "-F 100 -s 99",
  "reverse": true,
  "rounding": {
    "value": { "before": 1, "after": 2 },
    "time": { "before": 1, "after": 2 } }
},
{
  "id": "trap",
  "opt": "-F 110 --stop-on-maximum --fn-num-traps 10",
  "rounding": {
    "value": { "before": 3, "after": 0 },
    "time": { "before": 1, "after": 2 } }
},
{
  "id": "hiff",
  "opt": "-F 120 --stop-on-maximum -s 128",
  "rounding": {
    "value": { "before": 4, "after": 0 },
    "time": { "before": 1, "after": 2 } }
},
{
  "id": "plateau",
  "opt": "-F 130 --stop-on-maximum",
  "rounding": {
    "value": { "before": 3, "after": 0 },
    "time": { "before": 1, "after": 2 } }
},
{
  "id": "walsh2",
  "opt": "-F 162 -p instances/walsh2.100",
  "rounding": {
    "value": { "before": 3, "after": 2 },
    "time": { "before": 1, "after": 2 } }
}
],
"algorithms": [
  {
    "id": "rls",
    "opt": "-A 100 --restart"
  },
  {
    "id": "hc",
    "opt": "-A 150 --restart"
  },
  {
    "id": "sa",
    "opt": "-A 200 --sa-beta-ratio 1.05 --sa-num-trials 10"
  },
  {
    "id": "ea-1p1",
    "opt": "-A 300"
  },
  {
    "id": "ea-1p10",
    "opt": "-A 310 --ea-mu 1 --ea-lambda 10"
  },
  {
    "id": "ea-10p1",
    "opt": "-A 310 --ea-mu 10 --ea-lambda 1"
  }
],

```

```

    {
        "id": "ea-1c10",
        "opt": "-A 320 --ea-mu 1 --ea-lambda 10 --allow-no-mutation"
    },
    {
        "id": "ga",
        "opt": "-A 400 --ea-mu 100"
    },
    {
        "id": "pbil",
        "opt": "-A 500 -l 5e-3"
    },
    {
        "id": "umda",
        "opt": "-A 600 -x 100 -y 10"
    }
]
}

```

B Default parameters

```

# algorithm = 100
# bm_mc_reset_strategy = 1
# bm_num_gs_cycles = 1
# bm_num_gs_steps = 100
# bm_sampling = 1
# budget = 10000
# bv_size = 100
# description_path = description.txt
# ea_lambda = 100
# ea_mu = 10
# expression = x
# fn_name = noname
# fn_num_traps = 10
# fn_prefix_length = 2
# fn_threshold = 10
# fp_expression = (1-x)^2+100*(y-x^2)^2
# fp_lower_bound = -2
# fp_num_bits = 8
# fp_upper_bound = 2
# function = 0
# ga_crossover_bias = 0.5
# ga_crossover_probability = 0.5
# ga_tournament_size = 10
# hea_bit_herding = 0
# hea_num_seq_updates = 100
# hea_reset_period = 0
# hea_sampling_method = 0
# hea_weight = 1
# learning_rate = 0.001
# map = 0
# map_input_size = 100
# map_path = map.txt
# map_ts_length = 10
# map_ts_sampling_mode = 0
# mutation_rate = 1
# neighborhood = 0
# neighborhood_iterator = 0
# noise_stddev = 1
# num_iterations = 0
# num_threads = 1
# path = function.txt

```

```
# pn_mutation_rate = 1
# pn_neighborhood = 0
# pn_radius = 2
# population_size = 10
# pv_log_num_components = 5
# radius = 2
# rep_categorical_representation = 0
# results_path = results.json
# rls_patience = 50
# sa_beta_ratio = 1.2
# sa_initial_acceptance_probability = 0.6
# sa_num_transitions = 50
# sa_num_trials = 100
# seed = 0
# selection_size = 1
# solution_path = solution.txt
# target = 100
# print_defaults
# last_parameter
# exec_name = hnco
# version = 0.16
# Generated from hnco.json
```