

HNCO

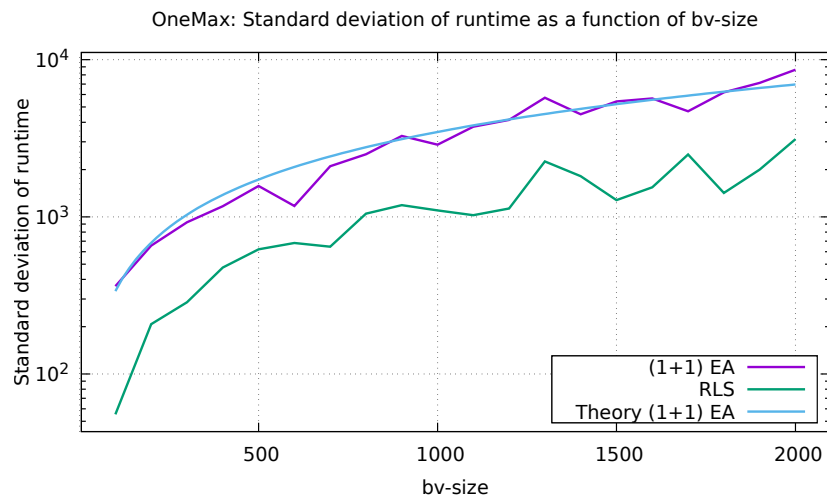
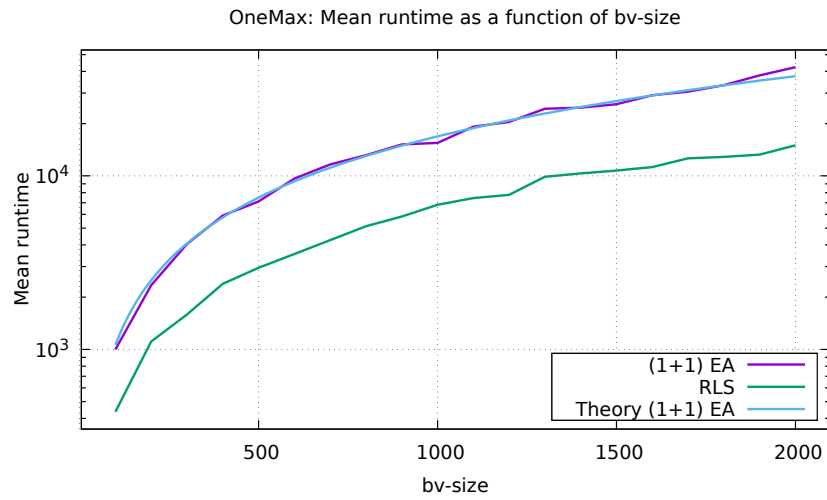
Runtime as a function of size of $(1+1)$ EA and RLS on OneMax and LeadingOnes

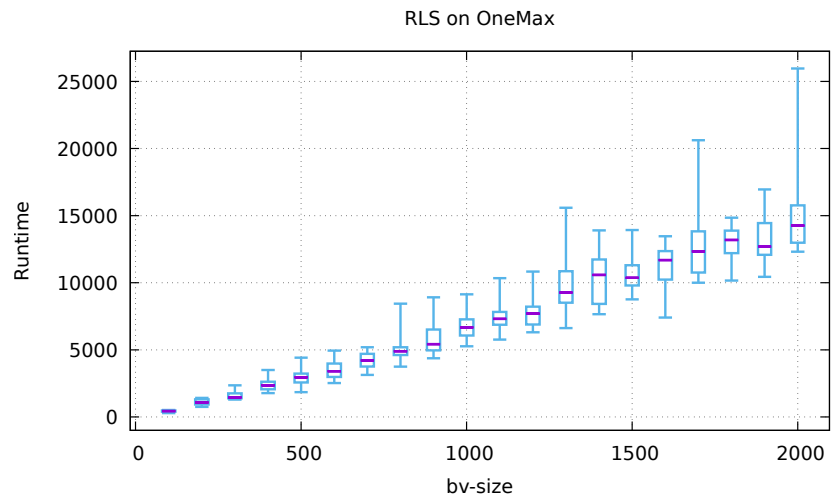
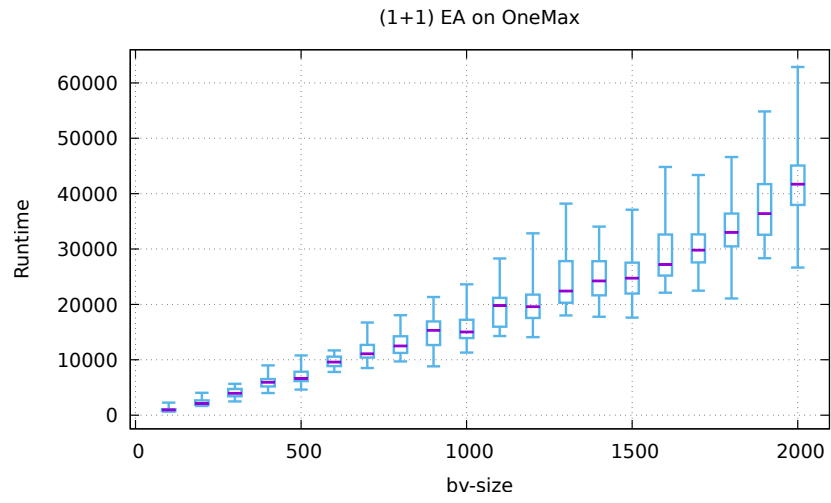
February 15, 2018

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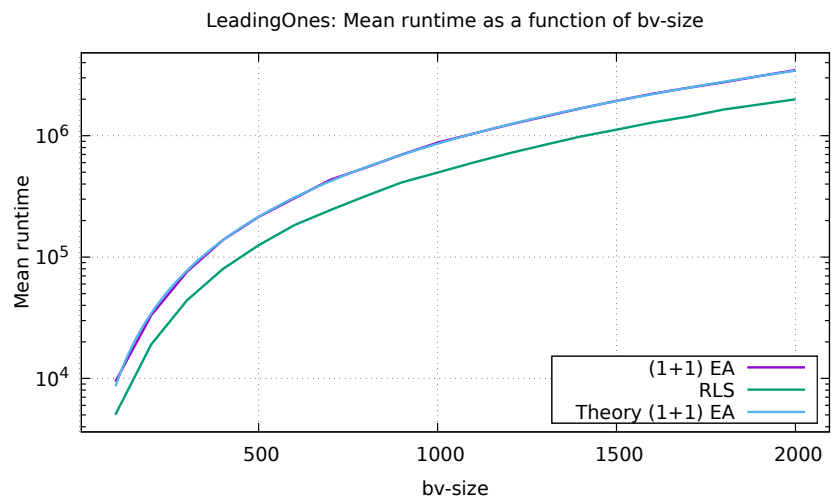
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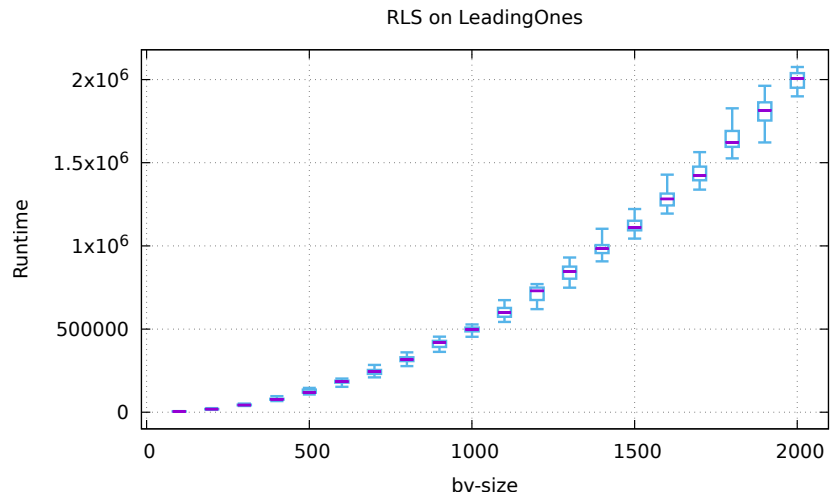
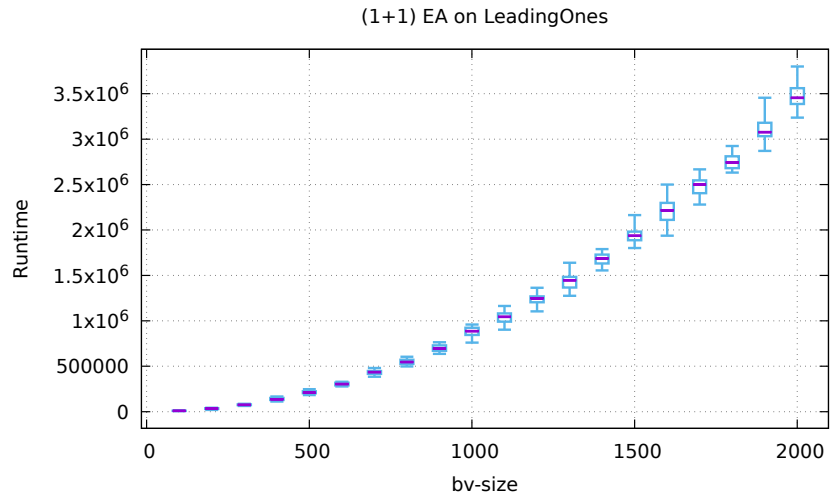
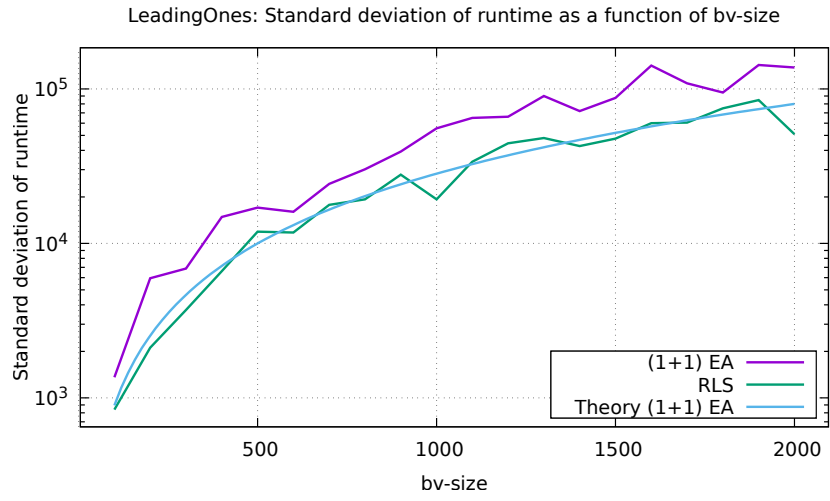
1 Function OneMax





2 Function LeadingOnes





A Plan

```
{
  "exec": "hnco",
  "opt": "--print-performance -i 0 -b 0 --stop-on-maximum",
  "num_runs": 20,
  "parallel": true,
  "results": "results",
  "report": "report",
  "graphics": "graphics",
  "parameter": {
```

```

    "id": "bv-size",
    "values_per1": "map { 100 + 100 * $_ } (0 .. 19)",
    "boxwidth": "40"
  },
  "functions": [
    {
      "id": "one-max",
      "name": "OneMax",
      "opt": "-F 0",
      "mean_gnuplot": [
        {
          "expression": "f(x) = exp(1) * (x + 1/2) * log(x) - 1.8925417883 * x",
          "title": "Theory (1+1) EA"
        }
      ],
      "stddev_gnuplot": [
        {
          "expression": "f(x) = sqrt(pi**2 / 6 * (exp(1) * x)**2 - (2 * exp(1) + 1) * exp(1)
↪ * x * log(x))",
          "title": "Theory (1+1) EA"
        }
      ]
    },
    {
      "id": "leading-ones",
      "name": "LeadingOnes",
      "opt": "-F 10",
      "mean_gnuplot": [
        {
          "expression": "f(x) = (exp(1) - 1) / 2 * x**2",
          "title": "Theory (1+1) EA"
        }
      ],
      "stddev_gnuplot": [
        {
          "expression": "f(x) = sqrt((exp(2) - 1) / 8 * x**3)",
          "title": "Theory (1+1) EA"
        }
      ]
    }
  ],
  "algorithms": [
    {
      "id": "ea-1p1",
      "name": "(1+1) EA",
      "opt": "-A 300 --allow-stay"
    },
    {
      "id": "rls",
      "name": "RLS",
      "opt": "-A 100 --rls-patience 0"
    }
  ]
}

```

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
# cache_budget = 0
# ea_lambda = 100
# ea_mu = 10
# fn_name = noname
# fn_num_traps = 10
# fn_prefix_length = 2
# fn_threshold = 10
# function = 0
# ga_crossover_bias = 0.5
# ga_crossover_probability = 0.5
# ga_tournament_size = 10
# hea_binary_dynamics = 0
# hea_delay = 10000
# hea_num_par_updates = 1
# hea_num_seq_updates = 100
# hea_rate_strategy = 0
# hea_reset_period = 0
# hea_sampling_method = 0
# hea_time_constant = 1000
# hea_weight = 1
# learning_rate = 0.001
# map = 0
# map_input_size = 100
# map_path = nopath
# mutation_probability = 1
# neighborhood = 0
# neighborhood_iterator = 0
# noise_stddev = 1
# num_iterations = 0
# num_threads = 1
# path = nopath
# pn_mutation_probability = 1
# pn_neighborhood = 0
# pn_radius = 2
# population_size = 10
# pv_log_num_components = 5
# radius = 2
# 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
# target = 100
# print_defaults
# last_parameter
# exec_name = hnco
# version = 0.7
# Generated from hnco.json

```