

HNCO

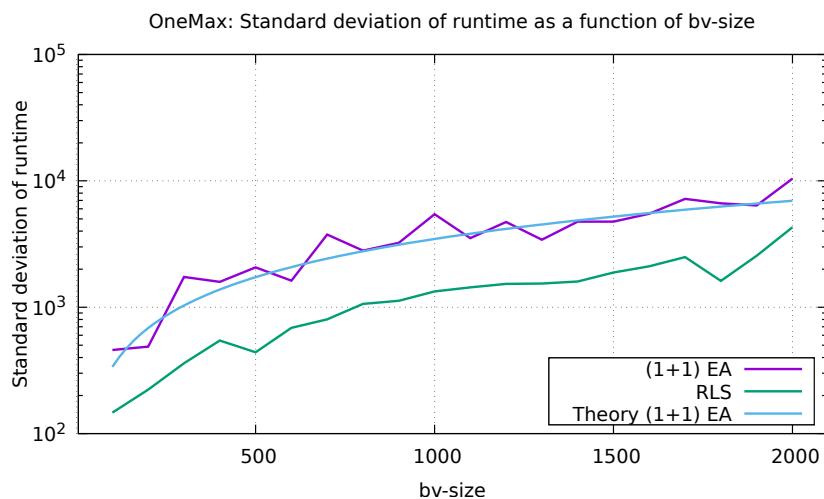
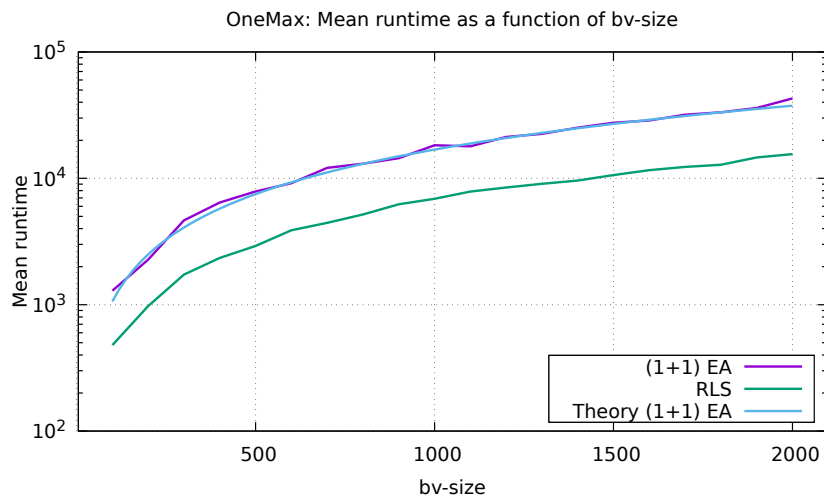
Runtime as a function of size of (1+1) EA and RLS on OneMax and LeadingOnes

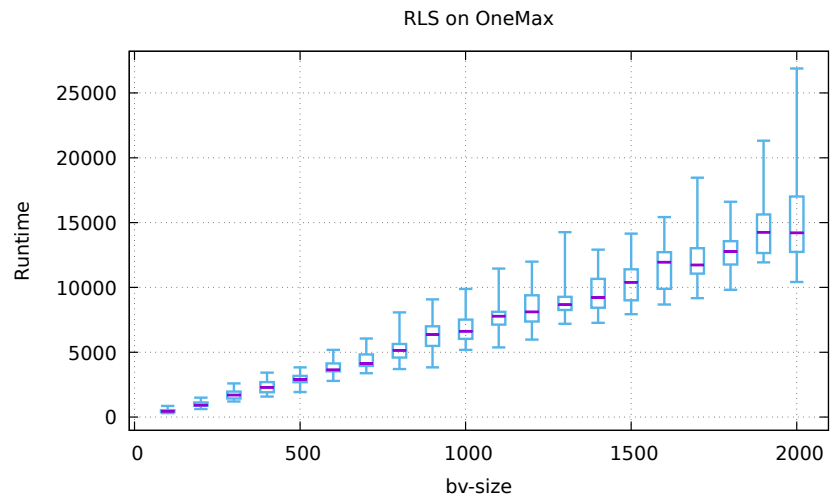
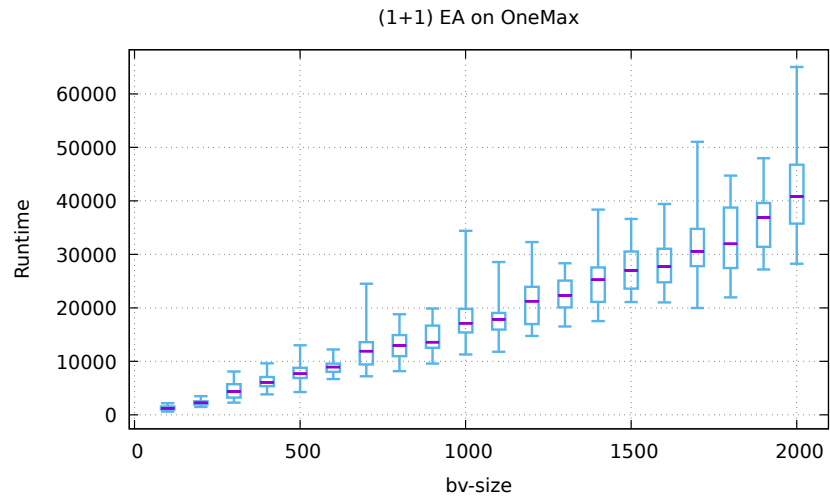
March 23, 2020

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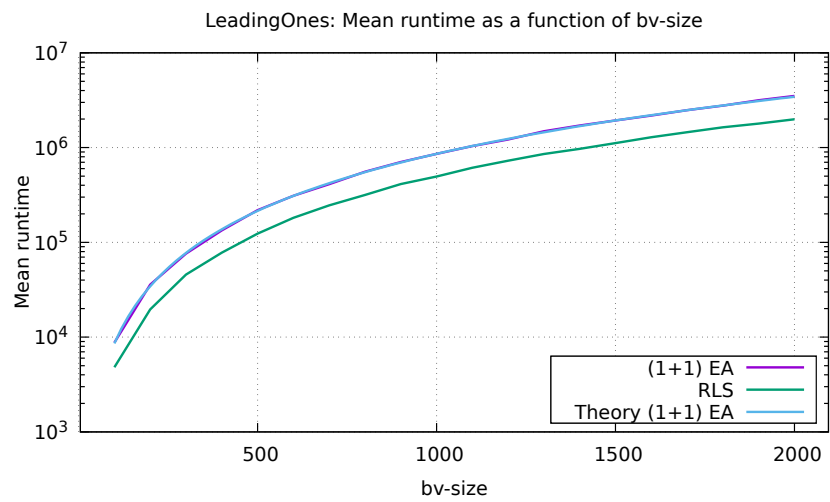
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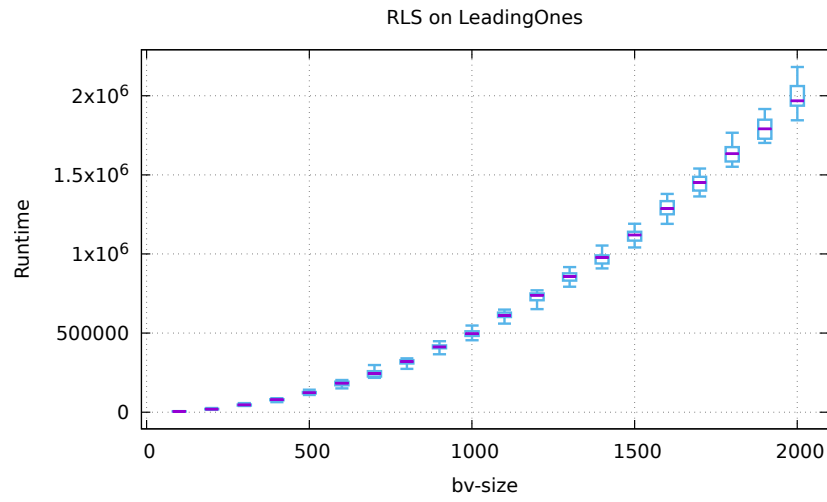
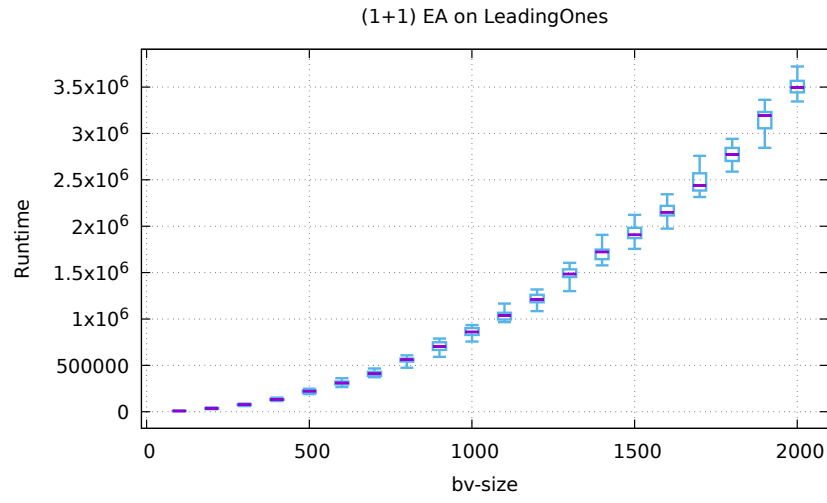
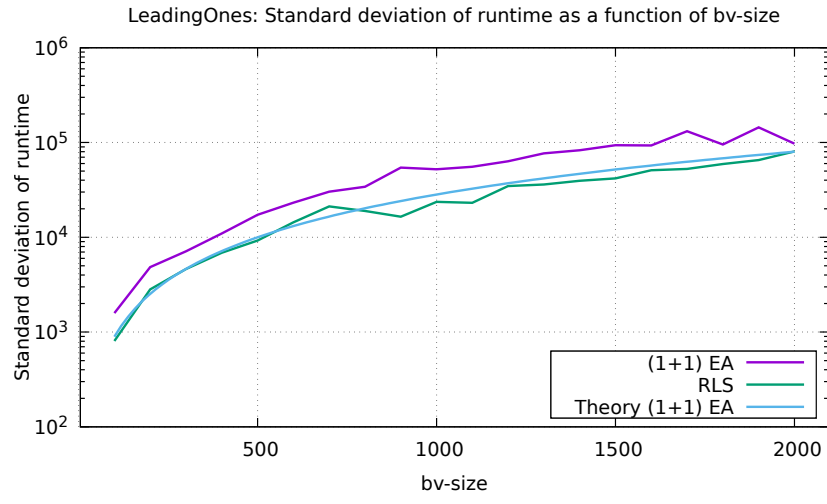
1 Function OneMax





2 Function LeadingOnes





A Plan

```
{
  "exec": "hnco",
  "opt": "--print-results --stop-on-maximum",
  "budget": 0,
  "num_runs": 20,
  "parallel": true,
  "parameter": {
    "id": "bv-size",
    "values_perl": "map { 100 + 100 * $_ } (0 .. 19)"
  }
}
```

```

},
"graphics": {
  "candlesticks": {
    "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
# 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
# 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_sequence_length = 10
# mutation_probability = 1
# neighborhood = 0
# neighborhood_iterator = 0
# noise_stddev = 1
# num_iterations = 0
# num_threads = 1
# path = function.txt
# pn_mutation_probability = 1
# pn_neighborhood = 0
# pn_radius = 2
# population_size = 10
# pv_log_num_components = 5
# radius = 2
# real_expression =  $(1-x)^2 + 100*(y-x^2)^2$ 
# real_lower_bound = -2
# real_num_bits = 8
# real_upper_bound = 2
# 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 = 0.13
# Generated from hnco.json

```