Machine Learning and Optimization for Algorithm Design

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Exercise 6

Q1:
DataSet:SAT11-RAND
('Oracle:', 9186.4405650033332)
('SB:', 19916.355933076662)

DataSet:SAT11-INDU
('Oracle:', 8187.5178182066666)
('SB:', 14605.904255913325)

Q2:
DataSet:SAT11-INDU

('assignment:', {u'minisathackLR_GL_SHR_2011-03-02': 66.0,
u'SAT09referencesolverprecosat_236': 413.0,
u'SAT09referencesolverglucose_1.0': 164.0,
u'minisathackMiniSAT_2.2.0-agile-26': 306.0,
u'CryptoMiniSat_Strange-Night2-st_fixed_': 1964.0,
u'minisathackminisat_psm_2011-04-01': 43.0,
u'EBGlucose_1.0': 96.0,
u'QuteRSat_2011-05-12_fixed_': 111.0,
u'minisathackcir_minisat_2011-05-13_simp_': 160.0, u'RestartSAT_B95': 22.0,
u'minisathackcontrasat_2011-03-02': 181.0,
u'minisathackreferenceminisat_2.2.0': 161.0,
u'Lingeling_587f_fixed_': 97.0,
u'MPhaseSAT64_2011-05-14_fixed_': 64.0, u'rcl_2011-04-01': 57.0,
u'minisathackEBMiniSAT_2011-03-02': 52.0,
u'glucose_2': 899.0, u'glueminisat_2.2.5': 130.0})

('permutation:', [u'glueminisat_2.2.5',
u'minisathackcir_minisat_2011-05-13_simp_',
u'glucose_2',
u'rcl_2011-04-01', u'EBGlucose_1.0',
u'minisathackLR_GL_SHR_2011-03-02',
u'CryptoMiniSat_Strange-Night2-st_fixed_',
u'MPhaseSAT64_2011-05-14_fixed_',
u'minisathackMiniSAT_2.2.0-agile-26',
u'minisathackcontrasat_2011-03-02',
u'SAT09referencesolverprecosat_236',
u'RestartSAT_B95',
u'minisathackreferenceminisat_2.2.0',
u'SAT09referencesolverglucose_1.0',
u'QuteRSat_2011-05-12_fixed_',
u'Lingeling_587f_fixed_',
u'minisathackEBMiniSAT_2011-03-02', u'minisathackminisat_psm_2011-04-01'])

('average time after optimization:', 9101.7972369666641)

DataSet:SAT11-RAND

('assignment:', {u'EagleUP_1.565.350': 646.0,
u'MPhaseSAT_M_2011-02-16': 221.0,
u'sparrow2011_sparrow2011_ubcsat1.2_2011-03-02': 1627.0,
u'sattime2011_2011-03-02': 70.0,
u'SAT09referencesolvermarch_hi_hi': 2045.0,
u'SAT09referencesolvergnovelty+2_2009-03-22': 53.0,
u'SAT09referencesolverTNM_2009-03-22': 56.0,
u'adaptg2wsat2011_2011-03-02': 43.0,
u'march_rw_2011-03-02': 234.0})

('permutation:', [u'sattime2011_2011-03-02', u'march_rw_2011-03-02',
u'sparrow2011_sparrow2011_ubcsat1.2_2011-03-02',
u'SAT09referencesolvermarch_hi_hi',
u'adaptg2wsat2011_2011-03-02',
u'MphaseSAT_M_2011-02-16',
u'SAT09referencesolverTNM_2009-03-22',
u'SAT09referencesolvergnovelty+2_2009-03-22',
u'EagleUP_1.565.350'])

('average time after optimization:', 9816.5711791183294)

FeedBack:

Question1: *It was very simple question and took no more than 2 hours.*
Question2: *It took me lot of time to figure out what to do in this question and its implementation took even longer. I spent more than 12 hours thinking and doing this question.*
Question3: *It also took me some time to figure out but since I started this question very late I only got to about 50% of this.*

Doing this sheet my comfort level with numpy has dramatically increased. The most interesting question was last one which unfortunately I might not be able to submit but still understanding concepts behind it and planning how to tackle it was fun enough.