

**double** crossoverProbability = 0.8;

**double** crossoverDistributionIndex = 20.0 ;

crossover = **new** SBXCrossover(crossoverProbability, crossoverDistributionIndex) ;

**double** mutationProbability = 0.4/ problem.getNumberOfVariables() ;

**double** mutationDistributionIndex = 20.0 ;

List<Double> lowerLimit = Arrays.*asList*(100.0, 100.0, 2.0, 3000.0, 500.0, 150.0, 100.0, 12.0 ) ;

List<Double> upperLimit = Arrays.*asList*(1000.0, 1000.0, 20.0, 4500.0, 2000.0, 600.0,200.0 , 16.0 ) ;

2016-11-24 12:48:43.582 INFO: Loggers configured with null [org.uma.jmetal.util.JMetalLogger configureLoggers]

2016-11-24 12:48:43.638 INFO: Total execution time: 593ms [org.uma.jmetal.runner.multiobjective.NSGAIIRunner main]

My Objectives printing started

15.36502547679123

173.14167407909326

16.936880388597643

67.08440237824381

23.21150477237147

41.985644267725036

13.266567465919143

180.52873884215472

15.67680893425715

69.2864406911941

27.400126303873748

40.35611611463904

16.936880388597643

67.08440237824381

19.489718532233717

51.989502570864936

My Objectives printing Ended

2016-11-24 12:48:43.655 INFO: Random seed: 1479962922920 [org.uma.jmetal.runner.AbstractAlgorithmRunner printFinalSolutionSet]

2016-11-24 12:48:43.657 INFO: Objectives values have been written to file FUN.tsv [org.uma.jmetal.runner.AbstractAlgorithmRunner printFinalSolutionSet]

2016-11-24 12:48:43.658 INFO: Variables values have been written to file VAR.tsv [org.uma.jmetal.runner.AbstractAlgorithmRunner printFinalSolutionSet]

2016-11-24 12:48:43.675 INFO:

Hypervolume (N) : 0.0

Hypervolume : 0.0

Epsilon (N) : 3.099254693958605

Epsilon : 35.44652268423855

GD (N) : 2.7327325145181818

GD : 31.220499993965706

IGD (N) : 1.7122214134084681

IGD : 19.33014303642438

IGD+ (N) : 2.9457748970535236

IGD+ : 33.237103873998

Spread (N) : 1.0589534553107267

Spread : 1.0634684184820618

Error ratio : 1.0

[org.uma.jmetal.runner.AbstractAlgorithmRunner printQualityIndicators]

2016-11-24 12:49:07.486 INFO: Loggers configured with null [org.uma.jmetal.util.JMetalLogger configureLoggers]

2016-11-24 12:49:07.539 INFO: Total execution time: 565ms [org.uma.jmetal.runner.multiobjective.NSGAIIRunner main]

My Objectives printing started

15.235045815819287

144.484067950151

23.84661436613999

44.31637472173763

15.651309873295311

81.35392540455892

18.296360284436865

77.3605781173384

14.505467624407167

203.459039005202

17.2242684665275

81.35347172244788

18.378521044403477

47.88802609755848

20.087618807377496

46.17281772317758

26.467348464880402

42.16073487596808

15.185008909964079

182.02902017642916

30.17185542786192

36.04255467828558

15.20077386771983

148.276771296526

25.244994840785004

43.8796742196694

18.159001165529702

80.89993630754371

15.235045815819287

144.484067950151

17.2242684665275

81.35347172244788

My Objectives printing Ended

2016-11-24 12:49:07.565 INFO: Random seed: 1479962946854 [org.uma.jmetal.runner.AbstractAlgorithmRunner printFinalSolutionSet]

2016-11-24 12:49:07.566 INFO: Objectives values have been written to file FUN.tsv [org.uma.jmetal.runner.AbstractAlgorithmRunner printFinalSolutionSet]

2016-11-24 12:49:07.567 INFO: Variables values have been written to file VAR.tsv [org.uma.jmetal.runner.AbstractAlgorithmRunner printFinalSolutionSet]

2016-11-24 12:49:07.586 INFO:

Hypervolume (N) : 0.0

Hypervolume : 0.0

Epsilon (N) : 2.722099912137318

Epsilon : 31.132961247885092

GD (N) : 2.037321203652094

GD : 23.273944008229567

IGD (N) : 1.598872658276835

IGD : 17.695289781572395

IGD+ (N) : 2.759138012544733

IGD+ : 30.482082398503888

Spread (N) : 1.0613938702348147

Spread : 1.0688348328254407

Error ratio : 1.0

[org.uma.jmetal.runner.AbstractAlgorithmRunner printQualityIndicators]

3. 2016-11-24 12:49:26.286 INFO: Loggers configured with null [org.uma.jmetal.util.JMetalLogger configureLoggers]

2016-11-24 12:49:26.340 INFO: Total execution time: 499ms [org.uma.jmetal.runner.multiobjective.NSGAIIRunner main]

My Objectives printing started

13.569699358112537

88.66402602222034

15.302030195896739

78.58860485971279

57.89989262800708

41.878731056419866

17.33684189862192

51.47875521429908

57.6387302028765

46.79727206546781

15.823458856047793

72.58807317684614

13.569699358112537

88.66402602222034

15.790206140067996

73.56036049085343

18.306163058060637

47.90591881068828

My Objectives printing Ended

2016-11-24 12:49:26.394 INFO: Random seed: 1479962965731 [org.uma.jmetal.runner.AbstractAlgorithmRunner printFinalSolutionSet]

2016-11-24 12:49:26.395 INFO: Objectives values have been written to file FUN.tsv [org.uma.jmetal.runner.AbstractAlgorithmRunner printFinalSolutionSet]

2016-11-24 12:49:26.397 INFO: Variables values have been written to file VAR.tsv [org.uma.jmetal.runner.AbstractAlgorithmRunner printFinalSolutionSet]

2016-11-24 12:49:26.415 INFO:

Hypervolume (N) : 0.0

Hypervolume : 0.0

Epsilon (N) : 3.686594715163158

Epsilon : 41.62370123098334

GD (N) : 1.6681928413506464

GD : 18.777386481797816

IGD (N) : 1.9970430659676845

IGD : 22.794259239189117

IGD+ (N) : 3.42081413921127

IGD+ : 39.067794696135806

Spread (N) : 0.981737599374504

Spread : 0.9661632702877747

Error ratio : 1.0

[org.uma.jmetal.runner.AbstractAlgorithmRunner printQualityIndicators]