

Python: 3.8.8 (default, Feb 24 2021, 15:54:32) [MSC v.1928 64 bit (AMD64)]

scipy: 1.7.1

numpy: 1.19.2

pandas: 1.1.3

sklearn: 0.24.2

Hello World!

Number of samples in fold1:75

Number of samples in fold2:75

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Part 1

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Number of mislabeled points out of a total 150 points : 3

Accuracy of the Support Vector Machines - Linear SVC model: 0.980000

Confusion Matrix:

[[50 0 0]

[0 48 2]

[0 1 49]]

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Part 2 - Principal component analysis

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Eigen Vectors:

[[0.36158968 -0.65653988 -0.58099728 0.31725455]

[-0.08226889 -0.72971237 0.59641809 -0.32409435]

[0.85657211 0.1757674 0.07252408 -0.47971899]

[0.35884393 0.07470647 0.54906091 0.75112056]]

Eigen Values:

[4.22484077 0.24224357 0.07852391 0.02368303]

Sum: 4.5692912751677826

Proportion of Variance (PoV) 0.9279898839113292

Number of mislabeled points out of a total 150 points : 13

Accuracy of the Support Vector Machines - Linear SVC model: 0.913333

Confusion Matrix:

[[50 0 0]

[0 44 6]

[0 7 43]]

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Part 3 - Simulated annaling

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Iteration: 0

Accepted Features: ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy: 0.9733333333333334

Pr[accept]: 0

Random uniform: 0

Status: Improved

Iteration: 1

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.9866666666666667

Pr[accept]: 0

Random uniform: 0

Status: Improved

Iteration: 2

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width']

Accuracy: 0.9533333333333334

Pr[accept]: 0.9346645654712513

Random uniform: 0.8239935007962791

Status: Accept

Iteration: 3

Accepted Features: ['petal-length', 'petal-width']

Accuracy: 0.9533333333333334

Pr[accept]: 1.0

Random uniform: 0.7071701766336956

Status: Accept

Iteration: 4

Accepted Features: ['petal-length', 'petal-width', 'sepal-length-pca', 'sepal-length']

Accuracy: 0.9733333333333334

Pr[accept]: 1.0

Random uniform: 0.7071701766336956

Status: Improved

Iteration: 5

Accepted Features: ['petal-length', 'petal-width', 'sepal-length-pca', 'sepal-length', 'sepal-width']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.7071701766336956

Status: Improved

Iteration: 6

Accepted Features: ['petal-length', 'petal-width', 'sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-width-pca']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.9302648124928479

Status: Accept

Iteration: 7

Accepted Features: ['petal-length', 'petal-width', 'sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-width-pca', 'sepal-width-pca', 'petal-length-pca']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.7500999181692093

Status: Accept

Iteration: 8

Accepted Features: ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'petal-length', 'sepal-length']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.6040169180616529

Status: Accept

Iteration: 9

Accepted Features: ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'petal-length', 'sepal-length', 'petal-length-pca']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.8847599803696605

Status: Accept

Iteration: 10

Accepted Features: ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'petal-length-pca']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.8130030878475782

Status: Accept

Iteration: 11

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.9866666666666667

Pr[accept]: 1.0

Random uniform: 0.4121061659554808

Status: Restart

Iteration: 12

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-length-pca']

Accuracy: 0.9666666666666667

Pr[accept]: 0.7840807682246864

Random uniform: 0.05837559197604625

Status: Accept

Iteration: 13

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-length-pca']

Accuracy: 0.9666666666666667

Pr[accept]: 1.0

Random uniform: 0.7773503319000962

Status: Accept

Iteration: 14

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.7773503319000962

Status: Improved

Iteration: 15

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-length-pca']

Accuracy: 0.9666666666666667

Pr[accept]: 0.8153958055474633

Random uniform: 0.04744880088053827

Status: Accept

Iteration: 16

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-length-pca', 'sepal-width']

Accuracy: 0.9733333333333334

Pr[accept]: 0.8153958055474633

Random uniform: 0.04744880088053827

Status: Improved

Iteration: 17

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-length-pca', 'sepal-width', 'sepal-width-pca']

Accuracy: 0.98

Pr[accept]: 0.8153958055474633

Random uniform: 0.04744880088053827

Status: Improved

Iteration: 18

Accepted Features: ['sepal-length-pca', 'petal-length', 'petal-width-pca', 'petal-length-pca']

Accuracy: 0.9333333333333333

Pr[accept]: 0.4243728456769502

Random uniform: 0.10376832243373191

Status: Accept

Iteration: 19

Accepted Features: ['sepal-length-pca', 'petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-width', 'sepal-width-pca']

Accuracy: 0.98

Pr[accept]: 0.4243728456769502

Random uniform: 0.10376832243373191

Status: Improved

Iteration: 20

Accepted Features: ['sepal-length-pca', 'petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-width']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.0805820904752721

Status: Accept

Iteration: 21

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.9866666666666667

Pr[accept]: 0.4243728456769496

Random uniform: 0.935531743446059

Status: Restart

Iteration: 22

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.98

Pr[accept]: 0.8618718815573825

Random uniform: 0.667629738450455

Status: Accept

Iteration: 23

Accepted Features: ['petal-length', 'sepal-width-pca', 'petal-length-pca']

Accuracy: 0.96

Pr[accept]: 0.6253850398956965

Random uniform: 0.31169157372594514

Status: Accept

Iteration: 24

Accepted Features: ['petal-length', 'sepal-width-pca', 'petal-length-pca', 'petal-width']

Accuracy: 0.98

Pr[accept]: 0.6253850398956965

Random uniform: 0.31169157372594514

Status: Improved

Iteration: 25

Accepted Features: ['petal-length', 'sepal-width-pca', 'petal-length-pca', 'petal-width', 'petal-width-pca']

Accuracy: 0.9866666666666667

Pr[accept]: 0.6253850398956965

Random uniform: 0.31169157372594514

Status: Improved

Iteration: 26

Accepted Features: ['petal-length', 'sepal-width-pca', 'petal-length-pca', 'petal-width', 'petal-width-pca', 'sepal-length-pca', 'sepal-length']

Accuracy: 0.9733333333333334

Pr[accept]: 0.7037364516598992

Random uniform: 0.22934501242528593

Status: Accept

Iteration: 27

Accepted Features: ['petal-length', 'sepal-width-pca', 'petal-length-pca', 'petal-width', 'petal-width-pca', 'sepal-length-pca', 'sepal-length', 'sepal-width']

Accuracy: 0.98

Pr[accept]: 0.7037364516598992

Random uniform: 0.22934501242528593

Status: Improved

Iteration: 28

Accepted Features: ['petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy: 0.9733333333333334

Pr[accept]: 0.8265654376242397

Random uniform: 0.22584307591202823

Status: Accept

Iteration: 29

Accepted Features: ['petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length', 'petal-width', 'sepal-length-pca']

Accuracy: 0.98

Pr[accept]: 0.8265654376242397

Random uniform: 0.22584307591202823

Status: Improved

Iteration: 30

Accepted Features: ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy: 0.96

Pr[accept]: 0.5421324699199648

Random uniform: 0.4496840175040837

Status: Accept

Iteration: 31

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.9866666666666667

Pr[accept]: 0.5421324699199648

Random uniform: 0.4496840175040837

Status: Restart

Iteration: 32

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.9866666666666667

Pr[accept]: 1.0

Random uniform: 0.0914888582003146

Status: Accept

Iteration: 33

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.98

Pr[accept]: 0.8001364743124383

Random uniform: 0.36983540364216094

Status: Accept

Iteration: 34

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.4733333333333333

Pr[accept]: 2.3220477597578997e-08

Random uniform: 0.8717142788564776

Status: Reject

Iteration: 35

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-width-pca', 'sepal-length']

Accuracy: 0.9733333333333334

Pr[accept]: 2.3220477597578997e-08

Random uniform: 0.8717142788564776

Status: Improved

Iteration: 36

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-width-pca', 'sepal-length']

Accuracy: 0.9733333333333334

Pr[accept]: 1.0

Random uniform: 0.659342008784204

Status: Accept

Iteration: 37

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-width-pca', 'sepal-length', 'sepal-width', 'sepal-length-pca']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.659342008784204

Status: Improved

Iteration: 38

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-width-pca', 'sepal-length', 'sepal-width', 'sepal-length-pca', 'petal-width']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.47171984684678514

Status: Accept

Iteration: 39

Accepted Features: ['petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.9616577460025977

Status: Accept

Iteration: 40

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'sepal-width-pca', 'sepal-length']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.6750716456460696

Status: Accept

Iteration: 41

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.9866666666666667

Pr[accept]: 0.32770342932437313

Random uniform: 0.9297843615990665

Status: Restart

Iteration: 42

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.98

Pr[accept]: 0.7529294226587894

Random uniform: 0.9133248354849969

Status: Reject

Iteration: 43

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca', 'sepal-length-pca', 'sepal-width']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.27964944429128646

Status: Accept

Iteration: 44

Accepted Features: ['sepal-length-pca', 'petal-length', 'petal-width-pca', 'petal-width', 'sepal-width']

Accuracy: 0.9533333333333334

Pr[accept]: 0.3020149040806339

Random uniform: 0.27769597113070366

Status: Accept

Iteration: 45

Accepted Features: ['sepal-length-pca', 'petal-length', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy: 0.98

Pr[accept]: 0.3020149040806339

Random uniform: 0.27769597113070366

Status: Improved

Iteration: 46

Accepted Features: ['sepal-length-pca', 'petal-length', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length', 'petal-length-pca']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.5262026196847719

Status: Accept

Iteration: 47

Accepted Features: ['petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'petal-length', 'sepal-length']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.5163919171269492

Status: Accept

Iteration: 48

Accepted Features: ['petal-width-pca', 'petal-width', 'sepal-width-pca', 'sepal-length']

Accuracy: 0.9733333333333334

Pr[accept]: 0.7214222903547586

Random uniform: 0.6199975854810362

Status: Accept

Iteration: 49

Accepted Features: ['sepal-width-pca', 'petal-width-pca', 'petal-width', 'sepal-length']

Accuracy: 0.9733333333333334

Pr[accept]: 1.0

Random uniform: 0.7248698471938934

Status: Accept

Iteration: 50

Accepted Features: ['sepal-width-pca', 'petal-width-pca', 'petal-width', 'sepal-length']

Accuracy: 0.96

Pr[accept]: 0.5041247574853256

Random uniform: 0.6505257644218501

Status: Reject

Iteration: 51

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.9866666666666667

Pr[accept]: 0.5041247574853256

Random uniform: 0.6505257644218501

Status: Restart

Iteration: 52

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca', 'sepal-length-pca', 'sepal-length']

Accuracy: 0.9733333333333334

Pr[accept]: 0.49524499339486566

Random uniform: 0.3987616609420992

Status: Accept

Iteration: 53

Accepted Features: ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca', 'sepal-length']

Accuracy: 0.98

Pr[accept]: 0.49524499339486566

Random uniform: 0.3987616609420992

Status: Improved

Iteration: 54

Accepted Features: ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca', 'sepal-length', 'sepal-width']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.8398104562722929

Status: Accept

Iteration: 55

Accepted Features: ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca', 'sepal-length', 'sepal-width']

Accuracy: 0.9733333333333334

Pr[accept]: 0.6878739570022548

Random uniform: 0.7344854253734607

Status: Reject

Iteration: 56

Accepted Features: ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca', 'sepal-length', 'sepal-width', 'petal-length']

Accuracy: 0.98

Pr[accept]: 0.6878739570022548

Random uniform: 0.7344854253734607

Status: Improved

Iteration: 57

Accepted Features: ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy: 0.9733333333333334

Pr[accept]: 0.6785785054080117

Random uniform: 0.3753076023010281

Status: Accept

Iteration: 58

Accepted Features: ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length', 'sepal-width']

Accuracy: 0.98

Pr[accept]: 0.6785785054080117

Random uniform: 0.3753076023010281

Status: Improved

Iteration: 59

Accepted Features: ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.6126891233228525

Status: Accept

Iteration: 60

Accepted Features: ['sepal-length-pca', 'petal-width-pca', 'petal-length-pca', 'sepal-width', 'sepal-length']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.9743221963261163

Status: Accept

Iteration: 61

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.9866666666666667

Pr[accept]: 0.43607895054726864

Random uniform: 0.5133557788070101

Status: Restart

Iteration: 62

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.9866666666666667

Pr[accept]: 1.0

Random uniform: 0.733286582643777

Status: Accept

Iteration: 63

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca', 'sepal-width']

Accuracy: 0.98

Pr[accept]: 0.653328197990186

Random uniform: 0.6215789256819165

Status: Accept

Iteration: 64

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.9866666666666667

Pr[accept]: 0.653328197990186

Random uniform: 0.6215789256819165

Status: Improved

Iteration: 65

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.9666666666666667

Pr[accept]: 0.26778588146275834

Random uniform: 0.9912012997302022

Status: Reject

Iteration: 66

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.98

Pr[accept]: 0.26778588146275834

Random uniform: 0.9912012997302022

Status: Improved

Iteration: 67

Accepted Features: ['petal-length', 'petal-width-pca', 'sepal-width-pca', 'petal-length-pca']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.7481557627149591

Status: Accept

Iteration: 68

Accepted Features: ['petal-length', 'petal-width-pca', 'sepal-width-pca', 'petal-length-pca']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.1107835061195358

Status: Accept

Iteration: 69

Accepted Features: ['petal-length', 'petal-width-pca', 'sepal-width-pca', 'petal-length-pca', 'sepal-length-pca']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.6403796167728119

Status: Accept

Iteration: 70

Accepted Features: ['petal-length', 'petal-width-pca', 'sepal-width-pca', 'petal-length-pca', 'sepal-length-pca', 'sepal-length', 'sepal-width']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.7561104736281525

Status: Accept

Iteration: 71

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.9866666666666667

Pr[accept]: 1.0

Random uniform: 0.23200345100410458

Status: Restart

Iteration: 72

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.98

Pr[accept]: 0.6147826510998128

Random uniform: 0.7373260451343858

Status: Reject

Iteration: 73

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca', 'sepal-length']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.7562257209989167

Status: Accept

Iteration: 74

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca', 'sepal-length']

Accuracy: 0.9733333333333334

Pr[accept]: 0.6044711348367547

Random uniform: 0.8470015065039513

Status: Reject

Iteration: 75

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca', 'sepal-length', 'sepal-width']

Accuracy: 0.98

Pr[accept]: 0.6044711348367547

Random uniform: 0.8470015065039513

Status: Improved

Iteration: 76

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca', 'sepal-length', 'sepal-width', 'sepal-length-pca']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.45799520462537713

Status: Accept

Iteration: 77

Accepted Features: ['petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.394398994522543

Status: Accept

Iteration: 78

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca']

Accuracy: 0.9733333333333334

Pr[accept]: 0.5882447095837152

Random uniform: 0.10269112630598154

Status: Accept

Iteration: 79

Accepted Features: ['petal-length', 'petal-width', 'sepal-width', 'sepal-width-pca']

Accuracy: 0.98

Pr[accept]: 0.5882447095837152

Random uniform: 0.10269112630598154

Status: Improved

Iteration: 80

Accepted Features: ['petal-length', 'petal-width', 'sepal-width', 'sepal-width-pca']

Accuracy: 0.9733333333333334

Pr[accept]: 0.5802955785432925

Random uniform: 0.8716184826893366

Status: Reject

Iteration: 81

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.9866666666666667

Pr[accept]: 1.0

Random uniform: 0.4270814688275868

Status: Restart

Iteration: 82

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.9866666666666667

Pr[accept]: 1.0

Random uniform: 0.22670403878832446

Status: Accept

Iteration: 83

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca', 'sepal-width', 'sepal-length-pca']

Accuracy: 0.98

Pr[accept]: 0.5707461090743419

Random uniform: 0.5510028174847029

Status: Accept

Iteration: 84

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca', 'sepal-width', 'sepal-length-pca']

Accuracy: 0.9733333333333334

Pr[accept]: 0.5647181220077625

Random uniform: 0.9508867784808082

Status: Reject

Iteration: 85

Accepted Features: ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca']

Accuracy: 0.9666666666666667

Pr[accept]: 0.5586725359301083

Random uniform: 0.5433763550449265

Status: Accept

Iteration: 86

Accepted Features: ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca']

Accuracy: 0.5866666666666667

Pr[accept]: 2.0789851025852636e-15

Random uniform: 0.9968319846286023

Status: Reject

Iteration: 87

Accepted Features: ['sepal-length-pca', 'petal-width', 'sepal-width', 'sepal-width-pca']

Accuracy: 0.9733333333333334

Pr[accept]: 2.0789851025852636e-15

Random uniform: 0.9968319846286023

Status: Improved

Iteration: 88

Accepted Features: ['sepal-length-pca', 'petal-width', 'sepal-width', 'sepal-width-pca']

Accuracy: 0.9666666666666667

Pr[accept]: 0.5473101004079021

Random uniform: 0.8796121618338477

Status: Reject

Iteration: 89

Accepted Features: ['sepal-length-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length', 'petal-length-pca']

Accuracy: 0.98

Pr[accept]: 0.5473101004079021

Random uniform: 0.8796121618338477

Status: Improved

Iteration: 90

Accepted Features: ['sepal-length-pca', 'petal-length-pca', 'sepal-width', 'sepal-length']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.5647830784586962

Status: Accept

Iteration: 91

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.9866666666666667

Pr[accept]: 1.0

Random uniform: 0.680512695093749

Status: Restart

Iteration: 92

Accepted Features: ['petal-length', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.98

Pr[accept]: 0.5370728021858587

Random uniform: 0.512427264634942

Status: Accept

Iteration: 93

Accepted Features: ['petal-length', 'petal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy: 0.9733333333333334

Pr[accept]: 0.5311806750806186

Random uniform: 0.9778642558411942

Status: Reject

Iteration: 94

Accepted Features: ['petal-length', 'petal-width', 'petal-length-pca', 'sepal-width-pca', 'sepal-length-pca']

Accuracy: 0.9733333333333334

Pr[accept]: 1.0

Random uniform: 0.18835787128085613

Status: Accept

Iteration: 95

Accepted Features: ['petal-length', 'petal-width', 'petal-length-pca', 'sepal-width-pca', 'sepal-length-pca', 'sepal-width', 'petal-width-pca']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.18835787128085613

Status: Improved

Iteration: 96

Accepted Features: ['petal-length', 'petal-width', 'petal-length-pca', 'sepal-width-pca', 'sepal-length-pca', 'sepal-width', 'petal-width-pca']

Accuracy: 0.9733333333333334

Pr[accept]: 0.5204501210207056

Random uniform: 0.7044923049715685

Status: Reject

Iteration: 97

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca']

Accuracy: 0.9733333333333334

Pr[accept]: 1.0

Random uniform: 0.08531977059281015

Status: Accept

Iteration: 98

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length', 'petal-length-pca']

Accuracy: 0.98

Pr[accept]: 1.0

Random uniform: 0.08531977059281015

Status: Improved

Iteration: 99

Accepted Features: ['petal-length', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length', 'petal-length-pca']

Accuracy: 0.9533333333333334

Pr[accept]: 0.06761823721569382

Random uniform: 0.8229389067970032

Status: Reject

Confusion Matrix - Simulated annealing:

[[50 0 0]

[0 47 3]

[0 4 46]]

#####

Part 4 - Genetic algorithm

#####

Generation: 1

.....

Feature set ['petal-length', 'petal-length-pca', 'petal-width', 'sepal-width', 'sepal-width-pca']

Accuracy 0.9866666666666667

.....

Feature set ['petal-length', 'petal-length-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-length']

Accuracy 0.98

Generation: 2

.....

Feature set ['petal-length', 'petal-length-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width-pca', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

Generation: 3

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width-pca', 'sepal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width-pca', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca']

Accuracy 0.98

Generation: 4

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

Generation: 5

.....

Feature set ['petal-length', 'petal-length-pca', 'petal-width', 'sepal-width', 'sepal-width-pca']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width-pca', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'petal-width-pca', 'sepal-width-pca', 'sepal-length', 'sepal-length-pca']

Accuracy 0.98

Generation: 6

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

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Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'petal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

Generation: 7

.....

Feature set ['petal-length', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length', 'sepal-length-pca']

Accuracy 0.98

Generation: 8

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width-pca', 'sepal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width-pca', 'petal-length-pca', 'sepal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'petal-width', 'petal-length', 'sepal-length']

Accuracy 0.98

Generation: 9

.....

Feature set ['petal-length', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

Generation: 10

.....

Feature set ['petal-length', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

Generation: 11

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width-pca', 'sepal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'petal-length-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

Generation: 12

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width-pca', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'petal-width']

Accuracy 0.98

Generation: 13

.....

Feature set ['sepal-length-pca', 'petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-width', 'sepal-width-pca', 'sepal-width']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width-pca', 'petal-length-pca', 'sepal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width-pca', 'petal-length-pca']

Accuracy 0.98

Generation: 14

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'petal-width-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length', 'petal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

Generation: 15

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width-pca', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length', 'sepal-width-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

Generation: 16

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length', 'petal-width', 'petal-length-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'petal-width-pca', 'sepal-width-pca']

Accuracy 0.98

Generation: 17

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width-pca', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'petal-width-pca', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

Generation: 18

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'petal-width-pca', 'sepal-width-pca', 'sepal-length', 'petal-width-pca']

Accuracy 0.98

Generation: 19

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length', 'petal-length-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'petal-width']

Accuracy 0.98

Generation: 20

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-width-pca']

Accuracy 0.98

Generation: 21

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'petal-width-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'petal-length-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

Generation: 22

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'petal-length-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length', 'sepal-length-pca']

Accuracy 0.98

Generation: 23

.....

Feature set ['petal-length', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length', 'petal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'petal-length', 'sepal-length', 'sepal-length']

Accuracy 0.98

Generation: 24

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'petal-length-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length-pca']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width-pca', 'petal-width-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy 0.98

Generation: 25

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width-pca', 'petal-width-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'petal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

Generation: 26

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width-pca', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-width-pca']

Accuracy 0.98

Generation: 27

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'petal-length-pca', 'sepal-width-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-length', 'petal-length-pca']

Accuracy 0.98

Generation: 28

.....

Feature set ['petal-length', 'petal-length-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

Generation: 29

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'petal-width-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length', 'petal-width-pca', 'petal-length-pca', 'sepal-width', 'sepal-length', 'sepal-length']

Accuracy 0.98

Generation: 30

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

Generation: 31

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width-pca', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'petal-width-pca', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

Generation: 32

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length', 'petal-width', 'petal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-width']

Accuracy 0.98

.....

Feature set ['petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

Generation: 33

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'petal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'petal-width', 'petal-length', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length', 'petal-length']

Accuracy 0.98

Generation: 34

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width-pca', 'petal-width-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length', 'petal-length']

Accuracy 0.98

.....

Feature set ['petal-length', 'petal-width-pca', 'petal-width', 'petal-length-pca', 'sepal-width', 'sepal-width-pca']

Accuracy 0.98

Generation: 35

.....

Feature set ['petal-length', 'petal-length-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length', 'sepal-width-pca']

Accuracy 0.98

Generation: 36

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width-pca', 'sepal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length', 'petal-length']

Accuracy 0.98

Generation: 37

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width-pca', 'sepal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length', 'petal-length-pca', 'sepal-width', 'sepal-width-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'petal-length', 'sepal-length']

Accuracy 0.98

Generation: 38

.....

Feature set ['petal-length', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'petal-width', 'petal-length', 'sepal-length']

Accuracy 0.98

Generation: 39

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

Generation: 40

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width-pca', 'petal-width-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width-pca', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca']

Accuracy 0.98

Generation: 41

.....

Feature set ['petal-length', 'petal-length-pca', 'petal-width', 'sepal-width', 'sepal-width-pca']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

Generation: 42

.....

Feature set ['sepal-length-pca', 'petal-length', 'petal-length-pca', 'petal-width', 'sepal-width', 'sepal-width']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width-pca', 'petal-width-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'petal-width-pca', 'sepal-width-pca', 'sepal-length', 'petal-length-pca']

Accuracy 0.98

Generation: 43

.....

Feature set ['petal-length', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length', 'petal-length-pca']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

Generation: 44

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width-pca', 'petal-length-pca', 'sepal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length', 'petal-length']

Accuracy 0.98

Generation: 45

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'petal-width-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width-pca', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'petal-width', 'petal-length', 'sepal-length']

Accuracy 0.98

Generation: 46

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width-pca', 'sepal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'petal-width-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca']

Accuracy 0.98

Generation: 47

.....

Feature set ['petal-length', 'petal-length-pca', 'petal-width', 'sepal-width', 'sepal-width-pca']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'petal-width-pca', 'sepal-width-pca', 'sepal-length', 'sepal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length', 'petal-width']

Accuracy 0.98

Generation: 48

.....

Feature set ['petal-length', 'petal-length-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.9866666666666667

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-length-pca', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'petal-length']

Accuracy 0.98

Generation: 49

.....

Feature set ['petal-length', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.9866666666666667

Confusion Matrix - Genetic algorithm:

```
[[50 0 0]
```

```
[ 0 48 2]
```

```
[ 0 0 50]]
```

.....

Feature set ['sepal-length-pca', 'sepal-length', 'sepal-width', 'petal-length', 'petal-width']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'petal-length-pca', 'sepal-length']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'sepal-width-pca', 'petal-length-pca', 'petal-length-pca']

Accuracy 0.98

.....

Feature set ['sepal-length-pca', 'petal-width-pca', 'sepal-width', 'sepal-width-pca', 'sepal-length']

Accuracy 0.98

Final Metrics for each part:

Part 1 - SVM Index(['sepal-length', 'sepal-width', 'petal-length', 'petal-width'], dtype='object')

Part 2 - PCA ['First Principal component']

Part 3 - Simulated annealing ['petal-length', 'petal-width-pca', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length', 'petal-length-pca']

Part 4 - Genetic algorithm ['petal-length', 'petal-width', 'sepal-width', 'sepal-width-pca', 'sepal-length']