

MacBook-Air:CadenKroonenberg_Assignment4 cskroonenberg\$ python3 CompareFeatureSelectionMethods.py

Original Features:

Confusion Matrix:

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

```
 [ 0 43  7]
```

```
 [ 0  2 48]]
```

Accuracy: 0.94

Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width']

PCA Transformation:

eigenvectors:

```
[[ 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]]
```

eigenvalues:

```
[4.22484077 0.24224357 0.07852391 0.02368303]
```

PoV: 0.9246162071742686

Confusion Matrix:

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

```
 [ 2 40  8]
```

```
 [ 0  1 49]]
```

Accuracy: 0.9266666666666666

Features: ['z1']

Simulated Annealing

0)

Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z2' 'z3' 'z4']

Accuracy: 0.9266666666666666

Pr[accept]: -

Rand Uniform: -

Restart Val: 0

Status: IMPROVED

1)

Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3'

'z4']

Accuracy: 0.9333333333333333

Pr[accept]: -

Rand Uniform: -

Restart Val: 0

Status: IMPROVED

2)

Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z2' 'z3' 'z4']

Accuracy: 0.9266666666666666

Pr[accept]: 0.9858158423524045

Rand Uniform: 0.37067879642183577

Restart Val: 1

Status: ACCEPTED

3)

Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3'

'z4']

Accuracy: 0.9333333333333333

Pr[accept]: -

Rand Uniform: -

Restart Val: 0

Status: IMPROVED

4)

Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z2' 'z3' 'z4']

Accuracy: 0.9266666666666666

Pr[accept]: 0.9718328750329809

Rand Uniform: 0.5055164225622116

Restart Val: 1

Status: ACCEPTED

5)

Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3'

'z4']

Accuracy: 0.9333333333333333

Pr[accept]: -

Rand Uniform: -

Restart Val: 0

Status: IMPROVED

6)

Features: ['sepal-length' 'sepal-width' 'petal-length' 'z2' 'z3' 'z4']

Accuracy: 0.9133333333333333

Pr[accept]: 0.879350749407306

Rand Uniform: 0.8624968031918802

Restart Val: 1

Status: ACCEPTED

- 7)
Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z2' 'z3' 'z4']
Accuracy: 0.9266666666666666
Pr[accept]: -
Rand Uniform: -
Restart Val: 2
Status: IMPROVED
- 8)
Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3' 'z4']
Accuracy: 0.9333333333333333
Pr[accept]: -
Rand Uniform: -
Restart Val: 0
Status: IMPROVED
- 9)
Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2' 'z4']
Accuracy: 0.9333333333333333
Pr[accept]: -
Rand Uniform: -
Restart Val: 0
Status: IMPROVED
- 10)
Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2' 'z3' 'z4']
Accuracy: 0.9266666666666666
Pr[accept]: 0.9310627797040223
Rand Uniform: 0.6212477885274876
Restart Val: 1
Status: ACCEPTED
- 11)
Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3' 'z4']
Accuracy: 0.9333333333333333
Pr[accept]: -
Rand Uniform: -
Restart Val: 0
Status: IMPROVED
- 12)
Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2' 'z3' 'z4']
Accuracy: 0.9266666666666666
Pr[accept]: 0.917856438456892
Rand Uniform: 0.975506333047037
Restart Val: 1
Status: DISCARDED
- 13)
Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2' 'z4']
Accuracy: 0.9333333333333333
Pr[accept]: -
Rand Uniform: -
Restart Val: 0
Status: IMPROVED
- 14)
Features: ['sepal-width' 'petal-width' 'z1' 'z2' 'z4']
Accuracy: 0.94
Pr[accept]: -
Rand Uniform: -
Restart Val: 0
Status: IMPROVED
- 15)
Features: ['sepal-width' 'z1' 'z2' 'z4']
Accuracy: 0.94
Pr[accept]: -
Rand Uniform: -
Restart Val: 0
Status: IMPROVED
- 16)
Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2' 'z4']
Accuracy: 0.9333333333333333
Pr[accept]: 0.8927263560102399
Rand Uniform: 0.09793133193076586
Restart Val: 1
Status: ACCEPTED
- 17)
Features: ['sepal-length' 'z1' 'z2' 'z4']

```

Accuracy: 0.94
Pr[accept]: -
Rand Uniform: -
Restart Val: 0
Status: IMPROVED

18)
Features: ['sepal-length' 'z1' 'z2']
Accuracy: 0.94
Pr[accept]: -
Rand Uniform: -
Restart Val: 0
Status: IMPROVED

19)
Features: ['sepal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9733333333333334
Pr[accept]: -
Rand Uniform: -
Restart Val: 0
Status: IMPROVED

20)
Features: ['sepal-length' 'petal-width']
Accuracy: 0.92
Pr[accept]: 0.33424186179383925
Rand Uniform: 0.1164441767984713
Restart Val: 1
Status: ACCEPTED

21)
Features: ['sepal-length' 'petal-length' 'petal-width' 'z2']
Accuracy: 0.9333333333333333
Pr[accept]: -
Rand Uniform: -
Restart Val: 2
Status: IMPROVED

22)
Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2' 'z4']
Accuracy: 0.9533333333333334
Pr[accept]: -
Rand Uniform: -
Restart Val: 3
Status: IMPROVED

23)
Features: ['sepal-length' 'petal-length' 'petal-width' 'z1']
Accuracy: 0.9666666666666667
Pr[accept]: -
Rand Uniform: -
Restart Val: 4
Status: IMPROVED

24)
Features: ['sepal-length' 'petal-length' 'z1']
Accuracy: 0.94
Pr[accept]: 0.43958780049272206
Rand Uniform: 0.8502167630547752
Restart Val: 5
Status: DISCARDED

25)
Features: ['sepal-length' 'petal-length' 'z1' 'z4']
Accuracy: 0.9466666666666667
Pr[accept]: 0.504124757485327
Rand Uniform: 0.13285830827739298
Restart Val: 6
Status: ACCEPTED

26)
Features: ['petal-length' 'z1']
Accuracy: 0.94
Pr[accept]: 0.4104870247867316
Rand Uniform: 0.3314968762173798
Restart Val: 7
Status: ACCEPTED

27)
Features: ['sepal-width' 'petal-length' 'z1' 'z2']
Accuracy: 0.94
Pr[accept]: -
Rand Uniform: -
Restart Val: 8
Status: IMPROVED

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28) Features: ['sepal-width' 'petal-length']
 Accuracy: 0.9466666666666667
 Pr[accept]: -
 Rand Uniform: -
 Restart Val: 9
 Status: IMPROVED

29) Features: ['sepal-length' 'petal-width' 'z1' 'z2']
 Accuracy: 0.9733333333333334
 Pr[accept]: 0.13720194740693104
 Rand Uniform: 0.08774417719860228
 Restart Val: 0
 Status: RESTART

30) Features: ['sepal-length' 'petal-width' 'z2']
 Accuracy: 0.8933333333333333
 Pr[accept]: 0.08494481873526988
 Rand Uniform: 0.3318119264218462
 Restart Val: 1
 Status: DISCARDED

31) Features: ['sepal-length' 'sepal-width' 'petal-width' 'z2']
 Accuracy: 0.9
 Pr[accept]: 0.0967508232217831
 Rand Uniform: 0.08738888704293091
 Restart Val: 2
 Status: ACCEPTED

32) Features: ['sepal-length' 'petal-width']
 Accuracy: 0.92
 Pr[accept]: -
 Rand Uniform: -
 Restart Val: 3
 Status: IMPROVED

33) Features: ['sepal-length' 'petal-width' 'z4']
 Accuracy: 0.9
 Pr[accept]: 0.08321718767458407
 Rand Uniform: 0.8890814956041354
 Restart Val: 4
 Status: DISCARDED

34) Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z4']
 Accuracy: 0.9666666666666667
 Pr[accept]: -
 Rand Uniform: -
 Restart Val: 5
 Status: IMPROVED

35) Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2' 'z4']
 Accuracy: 0.9533333333333334
 Pr[accept]: 0.48715249076486106
 Rand Uniform: 0.24038701124847683
 Restart Val: 6
 Status: ACCEPTED

36) Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z4']
 Accuracy: 0.9666666666666667
 Pr[accept]: -
 Rand Uniform: -
 Restart Val: 7
 Status: IMPROVED

37) Features: ['petal-width' 'z1' 'z2' 'z4']
 Accuracy: 0.9266666666666666
 Pr[accept]: 0.16965766581050307
 Rand Uniform: 0.02176187502620608
 Restart Val: 8
 Status: ACCEPTED

38) Features: ['petal-width' 'z1' 'z2']
 Accuracy: 0.9533333333333334
 Pr[accept]: -

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Rand Uniform:      -
Restart Val:       9
Status:            IMPROVED

39)
Features: ['sepal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9733333333333334
Pr[accept]:        0.04053946025012048
Rand Uniform:      0.7055363421746288
Restart Val:       0
Status:            RESTART

40)
Features: ['sepal-length' 'petal-width' 'z1']
Accuracy: 0.9533333333333334
Pr[accept]:        0.43958780049272284
Rand Uniform:      0.7352444948466408
Restart Val:       1
Status:            DISCARDED

41)
Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z3']
Accuracy: 0.96
Pr[accept]:        0.5702708613818083
Rand Uniform:      0.19398304933992494
Restart Val:       2
Status:            ACCEPTED

42)
Features: ['sepal-length' 'petal-width' 'z2']
Accuracy: 0.8933333333333333
Pr[accept]:        0.03168047259041158
Rand Uniform:      0.0605755625987483
Restart Val:       3
Status:            DISCARDED

43)
Features: ['sepal-length' 'petal-width']
Accuracy: 0.92
Pr[accept]:        0.09478307839833718
Rand Uniform:      0.7671645689206023
Restart Val:       4
Status:            DISCARDED

44)
Features: ['sepal-length' 'petal-width' 'z3']
Accuracy: 0.9066666666666666
Pr[accept]:        0.049109703808366226
Rand Uniform:      0.7220382272385446
Restart Val:       5
Status:            DISCARDED

45)
Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z3']
Accuracy: 0.9466666666666667
Pr[accept]:        0.2914529442899309
Rand Uniform:      0.028367465918347046
Restart Val:       6
Status:            ACCEPTED

46)
Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2' 'z3' 'z4']
Accuracy: 0.9266666666666666
Pr[accept]:        0.11019767813344011
Rand Uniform:      0.6564470062863017
Restart Val:       7
Status:            DISCARDED

47)
Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3'
'z4']
Accuracy: 0.9333333333333333
Pr[accept]:        0.1449296467237934
Rand Uniform:      0.10757737480127705
Restart Val:       8
Status:            ACCEPTED

48)
Features: ['sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3']
Accuracy: 0.9533333333333334
Pr[accept]:        -
Rand Uniform:      -
Restart Val:       9
Status:            IMPROVED

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49) Features: ['sepal-length' 'petal-width' 'z1' 'z2']
 Accuracy: 0.9733333333333334
 Pr[accept]: 0.009107744923050746
 Rand Uniform: 0.44017269353372335
 Restart Val: 0
 Status: RESTART

50) Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
 Accuracy: 0.98
 Pr[accept]: -
 Rand Uniform: -
 Restart Val: 0
 Status: IMPROVED

51) Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2' 'z4']
 Accuracy: 0.9533333333333334
 Pr[accept]: 0.2496350813604515
 Rand Uniform: 0.8158746992489482
 Restart Val: 1
 Status: DISCARDED

52) Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z4']
 Accuracy: 0.9666666666666667
 Pr[accept]: 0.49288322792040284
 Rand Uniform: 0.6838193372566603
 Restart Val: 2
 Status: DISCARDED

53) Features: ['sepal-length' 'z1' 'z2']
 Accuracy: 0.94
 Pr[accept]: 0.11494916335676918
 Rand Uniform: 0.6238012651541792
 Restart Val: 3
 Status: DISCARDED

54) Features: ['sepal-length' 'petal-width' 'z1' 'z2']
 Accuracy: 0.9733333333333334
 Pr[accept]: 0.6925693242052003
 Rand Uniform: 0.3886483289688456
 Restart Val: 4
 Status: ACCEPTED

55) Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z4']
 Accuracy: 0.9666666666666667
 Pr[accept]: 0.4731705807219371
 Rand Uniform: 0.17539023349924077
 Restart Val: 5
 Status: ACCEPTED

56) Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z3' 'z4']
 Accuracy: 0.9333333333333333
 Pr[accept]: 0.06948345122280165
 Rand Uniform: 0.07508145024916535
 Restart Val: 6
 Status: DISCARDED

57) Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2' 'z3' 'z4']
 Accuracy: 0.92
 Pr[accept]: 0.030507097474221038
 Rand Uniform: 0.936508963796599
 Restart Val: 7
 Status: DISCARDED

58) Features: ['sepal-length' 'petal-length' 'z1' 'z2' 'z3' 'z4']
 Accuracy: 0.9266666666666666
 Pr[accept]: 0.042576084288335155
 Rand Uniform: 0.7313493791551073
 Restart Val: 8
 Status: DISCARDED

59) Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3' 'z4']
 Accuracy: 0.9333333333333333
 Pr[accept]: 0.060233668263416515

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Rand Uniform:    0.14372392800683031
Restart Val:     9
Status:          DISCARDED

60)
Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.98
Pr[accept]:      0.025388235342336894
Rand Uniform:    0.39443458684267296
Restart Val:     0
Status:          RESTART

61)
Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2' 'z4']
Accuracy: 0.9533333333333334
Pr[accept]:      0.19016485111104072
Rand Uniform:    0.09835542706219069
Restart Val:     1
Status:          ACCEPTED

62)
Features: ['sepal-length' 'petal-length' 'z2' 'z4']
Accuracy: 0.9066666666666666
Pr[accept]:      0.009662954947836673
Rand Uniform:    0.4050270704183979
Restart Val:     2
Status:          DISCARDED

63)
Features: ['petal-length' 'z2' 'z4']
Accuracy: 0.8266666666666667
Pr[accept]:      5.2371769744699184e-05
Rand Uniform:    0.10521446518739752
Restart Val:     3
Status:          DISCARDED

64)
Features: ['petal-length' 'petal-width' 'z2' 'z4']
Accuracy: 0.9
Pr[accept]:      0.005383105741918063
Rand Uniform:    0.522101272219915
Restart Val:     4
Status:          DISCARDED

65)
Features: ['petal-length' 'petal-width' 'z4']
Accuracy: 0.9133333333333333
Pr[accept]:      0.012012966060438706
Rand Uniform:    0.05658734856165015
Restart Val:     5
Status:          DISCARDED

66)
Features: ['petal-length' 'z4']
Accuracy: 0.86
Pr[accept]:      0.00030916586255290456
Rand Uniform:    0.29393319435438836
Restart Val:     6
Status:          DISCARDED

67)
Features: ['sepal-width' 'petal-length' 'z2' 'z4']
Accuracy: 0.92
Pr[accept]:      0.016538888103788583
Rand Uniform:    0.08851473808798316
Restart Val:     7
Status:          DISCARDED

68)
Features: ['sepal-width' 'z2']
Accuracy: 0.58
Pr[accept]:      8.833083563607416e-13
Rand Uniform:    0.04323906058180571
Restart Val:     8
Status:          DISCARDED

69)
Features: ['z2']
Accuracy: 0.4666666666666667
Pr[accept]:      2.0107430795041403e-16
Rand Uniform:    0.0031969321927761696
Restart Val:     9
Status:          DISCARDED

70)

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Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.98
Pr[accept]: 1.751626023091239e-05
Rand Uniform: 0.6090743727712267
Restart Val: 0
Status: RESTART

71)
Features: ['sepal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9733333333333334
Pr[accept]: 0.616934020189345
Rand Uniform: 0.471585176788179
Restart Val: 1
Status: ACCEPTED

72)
Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2' 'z3']
Accuracy: 0.9466666666666667
Pr[accept]: 0.08638168612061395
Rand Uniform: 0.17734684792324806
Restart Val: 2
Status: DISCARDED

73)
Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3']
Accuracy: 0.9466666666666667
Pr[accept]: 0.08349294036062674
Rand Uniform: 0.7929967257534315
Restart Val: 3
Status: DISCARDED

74)
Features: ['sepal-length' 'sepal-width' 'petal-length' 'z1' 'z2' 'z3']
Accuracy: 0.92
Pr[accept]: 0.01077407767894363
Rand Uniform: 0.17489719928121905
Restart Val: 4
Status: DISCARDED

75)
Features: ['sepal-width' 'petal-length' 'z1' 'z2' 'z3']
Accuracy: 0.94
Pr[accept]: 0.04683031685241946
Rand Uniform: 0.021660259248063918
Restart Val: 5
Status: ACCEPTED

76)
Features: ['z1' 'z2' 'z3']
Accuracy: 0.94
Pr[accept]: -
Rand Uniform: -
Restart Val: 6
Status: IMPROVED

77)
Features: ['z1' 'z2']
Accuracy: 0.9333333333333333
Pr[accept]: 0.025561533206507465
Rand Uniform: 0.6520870516872824
Restart Val: 7
Status: DISCARDED

78)
Features: ['sepal-width' 'z1' 'z2']
Accuracy: 0.94
Pr[accept]: -
Rand Uniform: -
Restart Val: 8
Status: IMPROVED

79)
Features: ['sepal-width' 'z2']
Accuracy: 0.58
Pr[accept]: 9.913311359097348e-15
Rand Uniform: 0.7043832428776834
Restart Val: 9
Status: DISCARDED

80)
Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.98
Pr[accept]: 0.002512707158571466
Rand Uniform: 0.514502229194622
Restart Val: 0

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Status:          RESTART

81)
Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9466666666666667
Pr[accept]:    0.06360252928362682
Rand Uniform:  0.6900220345846393
Restart Val:   1
Status:        DISCARDED

82)
Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1']
Accuracy: 0.9466666666666667
Pr[accept]:    0.061475556020613706
Rand Uniform:  0.6641636036981575
Restart Val:   2
Status:        DISCARDED

83)
Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2' 'z4']
Accuracy: 0.9333333333333333
Pr[accept]:    0.019208911780880265
Rand Uniform:  0.8490728555549064
Restart Val:   3
Status:        DISCARDED

84)
Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3'
'z4']
Accuracy: 0.9333333333333333
Pr[accept]:    0.018315638888734234
Rand Uniform:  0.2791605876328612
Restart Val:   4
Status:        DISCARDED

85)
Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2' 'z3' 'z4']
Accuracy: 0.92
Pr[accept]:    0.005494093721055432
Rand Uniform:  0.07201611047097944
Restart Val:   5
Status:        DISCARDED

86)
Features: ['petal-length' 'petal-width' 'z1' 'z2' 'z3' 'z4']
Accuracy: 0.9266666666666666
Pr[accept]:    0.009276489328819647
Rand Uniform:  0.434108130839157
Restart Val:   6
Status:        DISCARDED

87)
Features: ['petal-length' 'petal-width' 'z2' 'z3' 'z4']
Accuracy: 0.88
Pr[accept]:    0.0001394853443830099
Rand Uniform:  0.20467692749008437
Restart Val:   7
Status:        DISCARDED

88)
Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z2' 'z3' 'z4']
Accuracy: 0.9266666666666666
Pr[accept]:    0.008319811786177996
Rand Uniform:  0.26463577042863773
Restart Val:   8
Status:        DISCARDED

89)
Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3'
'z4']
Accuracy: 0.9333333333333333
Pr[accept]:    0.014435061028017875
Rand Uniform:  0.21553861906684846
Restart Val:   9
Status:        DISCARDED

90)
Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.98
Pr[accept]:    0.007461795697040256
Rand Uniform:  0.32446015635562475
Restart Val:   0
Status:        RESTART

91)

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Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3']
Accuracy: 0.9466666666666667
Pr[accept]: 0.04526423397858693
Rand Uniform: 0.6141111965475877
Restart Val: 1
Status: DISCARDED

92)
Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2' 'z3']
Accuracy: 0.9466666666666667
Pr[accept]: 0.04375052349368002
Rand Uniform: 0.9583151599709283
Restart Val: 2
Status: DISCARDED

93)
Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3'
'z4']
Accuracy: 0.9333333333333333
Pr[accept]: 0.011931522535756175
Rand Uniform: 0.2807919344707205
Restart Val: 3
Status: DISCARDED

94)
Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2' 'z3']
Accuracy: 0.9466666666666667
Pr[accept]: 0.040873272585430935
Rand Uniform: 0.6133542024386076
Restart Val: 4
Status: DISCARDED

95)
Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3'
'z4']
Accuracy: 0.9333333333333333
Pr[accept]: 0.010847620586711428
Rand Uniform: 0.5172052856313109
Restart Val: 5
Status: DISCARDED

96)
Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2' 'z4']
Accuracy: 0.9533333333333334
Pr[accept]: 0.07336965136838325
Rand Uniform: 0.8304992046683933
Restart Val: 6
Status: DISCARDED

97)
Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.98
Pr[accept]: -
Rand Uniform: -
Restart Val: 0
Status: IMPROVED

98)
Features: ['sepal-length' 'petal-length' 'petal-width' 'z2']
Accuracy: 0.9333333333333333
Pr[accept]: 0.00940356255149524
Rand Uniform: 0.42092843440787087
Restart Val: 1
Status: DISCARDED

99)
Features: ['sepal-length' 'petal-length' 'z2']
Accuracy: 0.9133333333333333
Pr[accept]: 0.001188939105405431
Rand Uniform: 0.6111093468445016
Restart Val: 2
Status: DISCARDED

Final Feature Set (Simulated Annealing):
Confusion Matrix:
[[50 0 0]
 [0 48 2]
 [0 1 49]]
Accuracy: 0.98
Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']

Genetic Algorithm
0)
1.
Features: ['sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3']

```

Accuracy: 0.9533333333333334

2. Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9466666666666667

3. Features: ['sepal-width' 'petal-width' 'z1']
Accuracy: 0.9466666666666667

4. Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3']
Accuracy: 0.9466666666666667

5. Features: ['sepal-width' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.94

1)

1. Features: ['sepal-width' 'petal-width' 'z1' 'z2']
Accuracy: 0.9533333333333334

2. Features: ['sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3']
Accuracy: 0.9533333333333334

3. Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1']
Accuracy: 0.9466666666666667

4. Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9466666666666667

5. Features: ['sepal-width' 'petal-length' 'petal-width']
Accuracy: 0.9466666666666667

2)

1. Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2']
Accuracy: 0.96

2. Features: ['sepal-width' 'petal-width' 'z1' 'z2']
Accuracy: 0.9533333333333334

3. Features: ['petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9533333333333334

4. Features: ['sepal-width' 'petal-length' 'petal-width' 'z1' 'z2' 'z3']
Accuracy: 0.9533333333333334

5. Features: ['sepal-length' 'sepal-width' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9466666666666667

3)

1. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.98

2. Features: ['sepal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9733333333333334

3. Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2']
Accuracy: 0.96

4. Features: ['sepal-width' 'petal-width' 'z1' 'z2']
Accuracy: 0.9533333333333334

5. Features: ['petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9533333333333334

4)

1. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.98

2. Features: ['sepal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9733333333333334

3. Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z4']
Accuracy: 0.9666666666666667

4. Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2']
Accuracy: 0.96

5. Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z3']
Accuracy: 0.96

5)

1. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.98

2. Features: ['sepal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9733333333333334

3.

[illegible]

[illegible]

[illegible]

[illegible]

27) 5. Accuracy: 0.9666666666666667
Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z4']
Accuracy: 0.96

1. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.98

2. Features: ['sepal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9733333333333334

3. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1']
Accuracy: 0.9666666666666667

4. Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z4']
Accuracy: 0.9666666666666667

28) 5. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z4']
Accuracy: 0.96

1. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.98

2. Features: ['sepal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9733333333333334

3. Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z4']
Accuracy: 0.9666666666666667

4. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1']
Accuracy: 0.9666666666666667

5. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z4']
Accuracy: 0.96

29) 1. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.98

2. Features: ['sepal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9733333333333334

3. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1']
Accuracy: 0.9666666666666667

4. Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z4']
Accuracy: 0.9666666666666667

5. Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2']
Accuracy: 0.96

30) 1. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.98

2. Features: ['sepal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9733333333333334

3. Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z4']
Accuracy: 0.9666666666666667

4. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1']
Accuracy: 0.9666666666666667

5. Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2']
Accuracy: 0.96

31) 1. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.98

2. Features: ['sepal-length' 'petal-width' 'z1' 'z2']
Accuracy: 0.9733333333333334

3. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1']
Accuracy: 0.9666666666666667

4. Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z4']
Accuracy: 0.9666666666666667

5. Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2']
Accuracy: 0.96

32)


```

33) 1. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
    Accuracy: 0.98
    2. Features: ['sepal-length' 'petal-width' 'z1' 'z2']
    Accuracy: 0.9733333333333334
    3. Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z4']
    Accuracy: 0.9666666666666667
    4. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1']
    Accuracy: 0.9666666666666667
    5. Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2']
    Accuracy: 0.96

34) 1. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
    Accuracy: 0.98
    2. Features: ['sepal-length' 'petal-width' 'z1' 'z2']
    Accuracy: 0.9733333333333334
    3. Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z4']
    Accuracy: 0.9666666666666667
    4. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1']
    Accuracy: 0.9666666666666667
    5. Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z3']
    Accuracy: 0.96

35) 1. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
    Accuracy: 0.98
    2. Features: ['sepal-length' 'petal-width' 'z1' 'z2']
    Accuracy: 0.9733333333333334
    3. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1']
    Accuracy: 0.9666666666666667
    4. Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z4']
    Accuracy: 0.9666666666666667
    5. Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z3']
    Accuracy: 0.96

36) 1. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
    Accuracy: 0.98
    2. Features: ['sepal-length' 'petal-width' 'z1' 'z2']
    Accuracy: 0.9733333333333334
    3. Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z4']
    Accuracy: 0.9666666666666667
    4. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1']
    Accuracy: 0.9666666666666667
    5. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z4']
    Accuracy: 0.96

37) 1. Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
    Accuracy: 0.98
    2. Features: ['sepal-length' 'petal-width' 'z1' 'z2']

```


[illegible]

```

48)
1.      Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
      Accuracy: 0.98
2.      Features: ['sepal-length' 'petal-width' 'z1' 'z2']
      Accuracy: 0.9733333333333334
3.      Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z4']
      Accuracy: 0.9666666666666667
4.      Features: ['sepal-length' 'petal-length' 'petal-width' 'z1']
      Accuracy: 0.9666666666666667
5.      Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2']
      Accuracy: 0.96

```

```

49)
1.      Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']
      Accuracy: 0.98
2.      Features: ['sepal-length' 'petal-width' 'z1' 'z2']
      Accuracy: 0.9733333333333334
3.      Features: ['sepal-length' 'petal-width' 'z1' 'z2' 'z4']
      Accuracy: 0.9666666666666667
4.      Features: ['sepal-length' 'petal-length' 'petal-width' 'z1']
      Accuracy: 0.9666666666666667
5.      Features: ['sepal-length' 'sepal-width' 'petal-width' 'z1' 'z2']
      Accuracy: 0.96

```

Final Feature Set (Genetic Algorithm):

Confusion Matrix:

```

[[50  0  0]
 [ 0 48  2]
 [ 0  1 49]]

```

Accuracy: 0.98

Features: ['sepal-length' 'petal-length' 'petal-width' 'z1' 'z2']

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