DATA VISUALIZATION WITH PYTHON

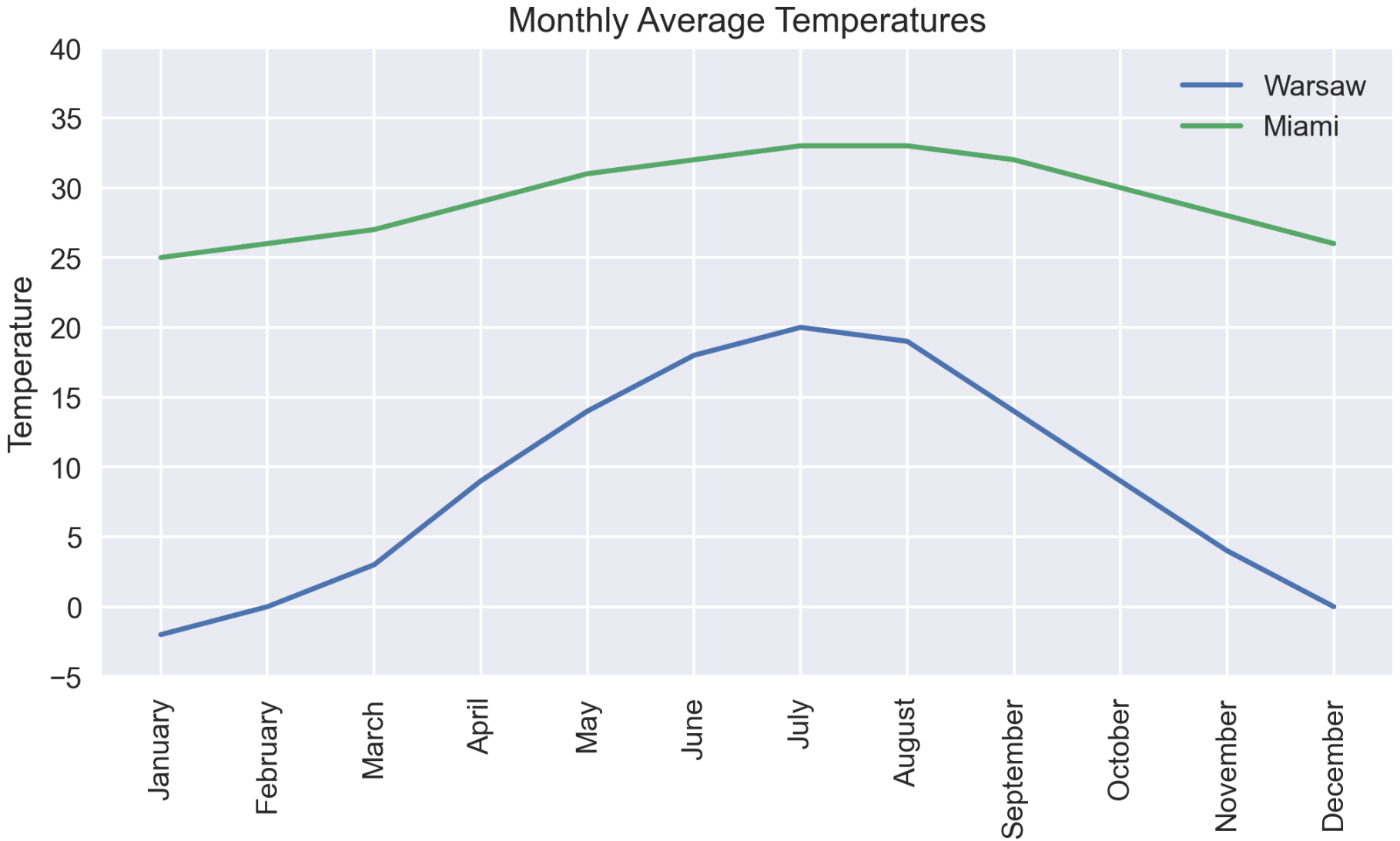
Jarek Krzysztofik, December 2022

INTRODUCTION

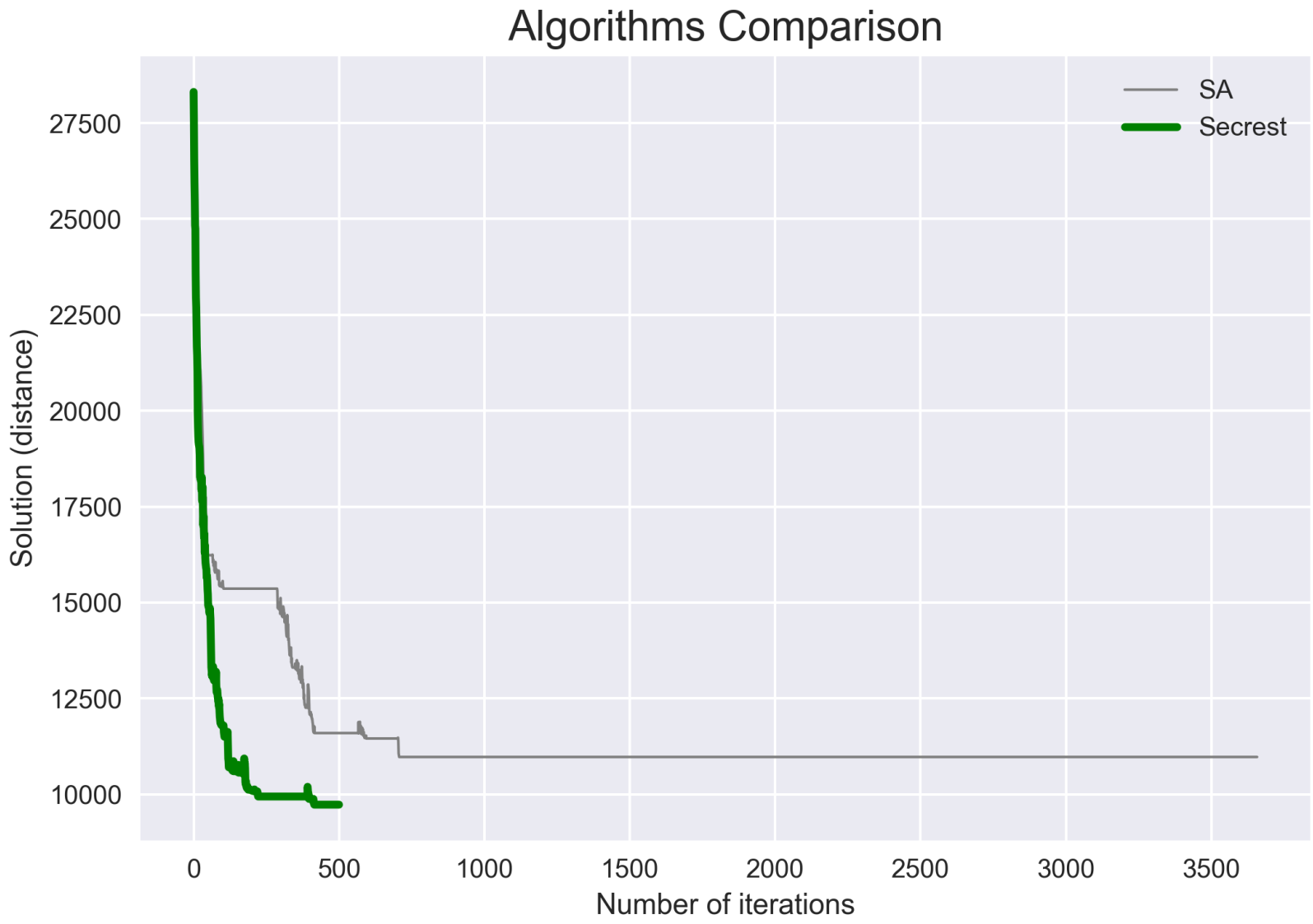
Simple examples showing my skills in using Python for data visualization.

Tool utilised: Python (including matplotlib, numpy, pandas), Visual Studio Code.

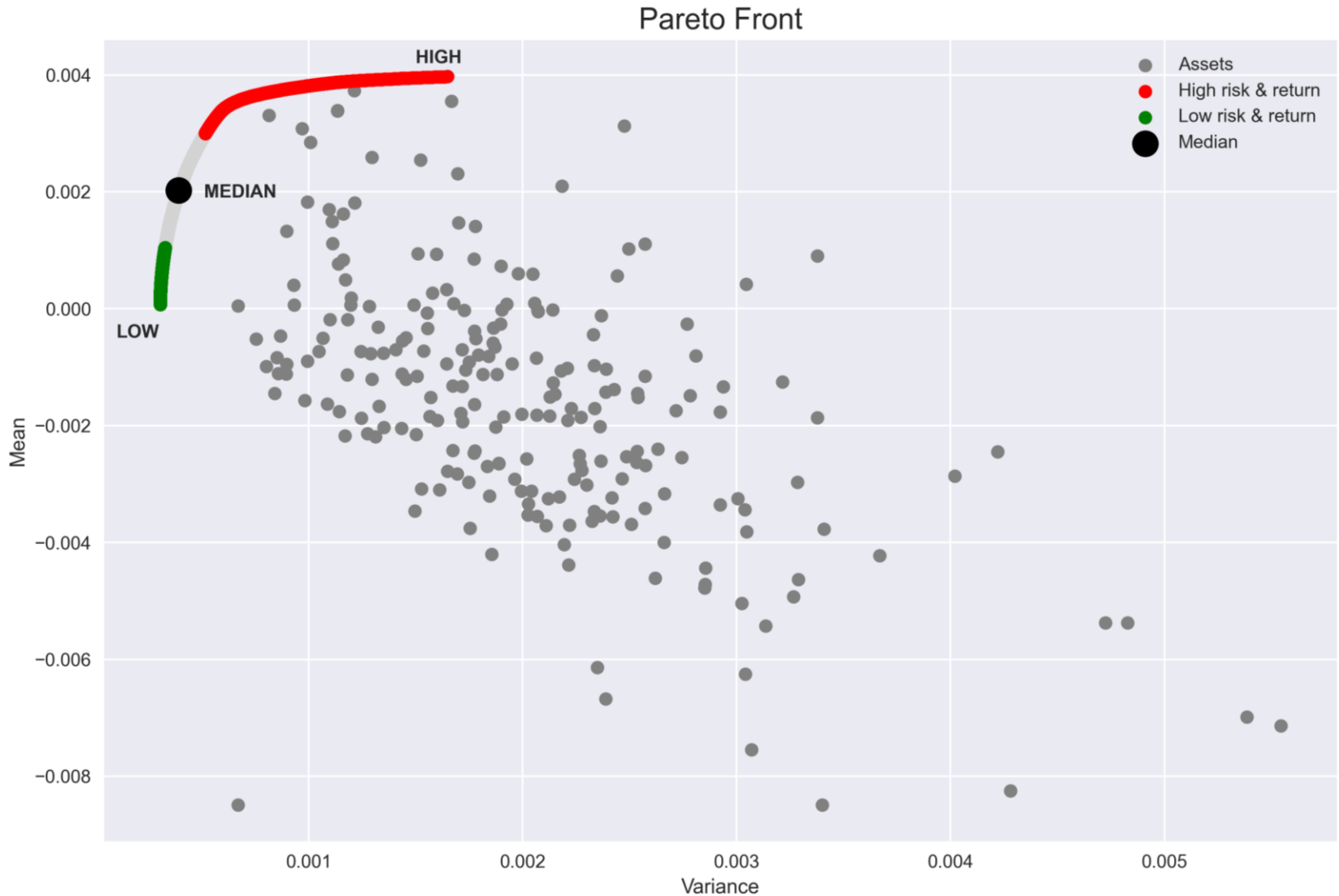
CASE 1


Monthly Average Temperatures
Warsaw
Miami
Temperature
40
35
30
25
20
15
10
5
0
−5
January
February
March
April
May
June
July
August
September
October
November
December

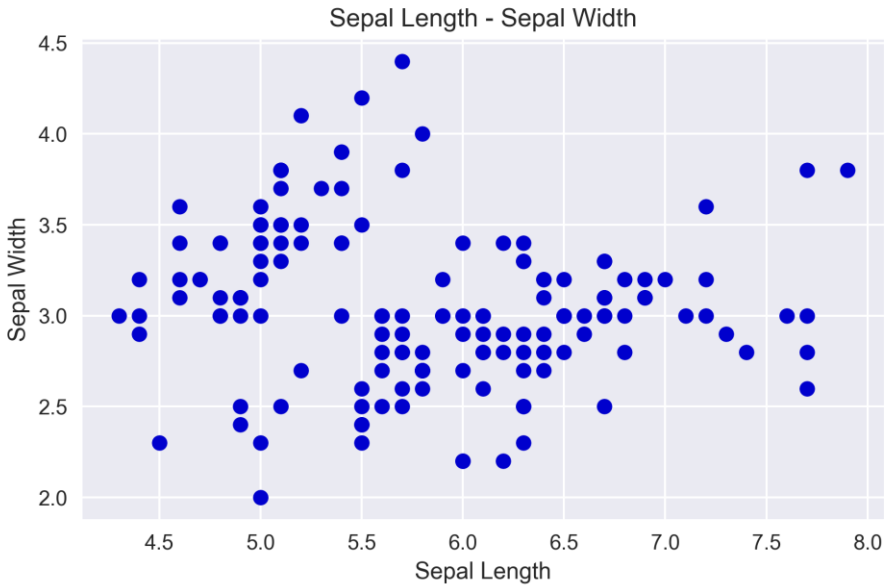
CASE 2

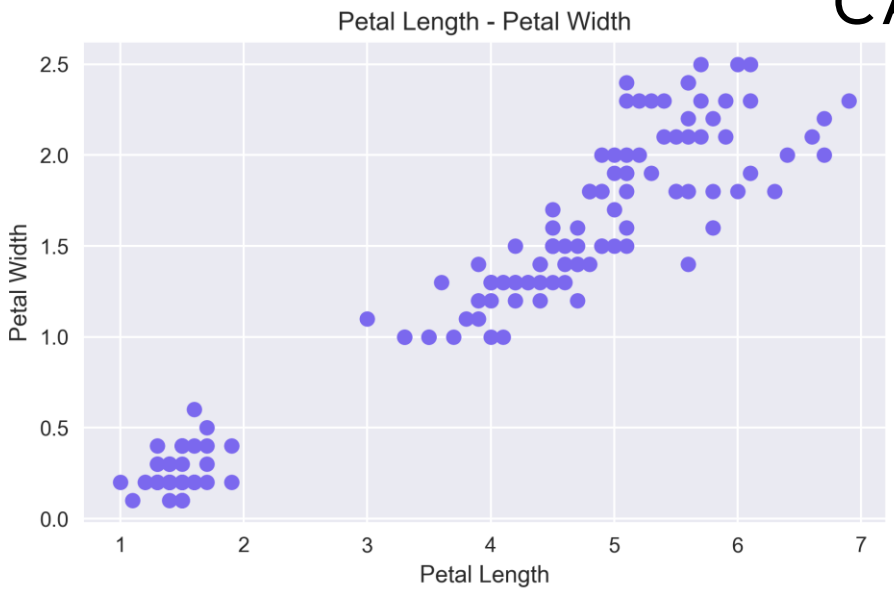

Algorithms Comparison
SA
Secrest
Solution (distance)
27500
25000
22500
20000
17500
15000
12500
10000
0
500
1000
1500
2000
2500
3000
3500
Number of iterations

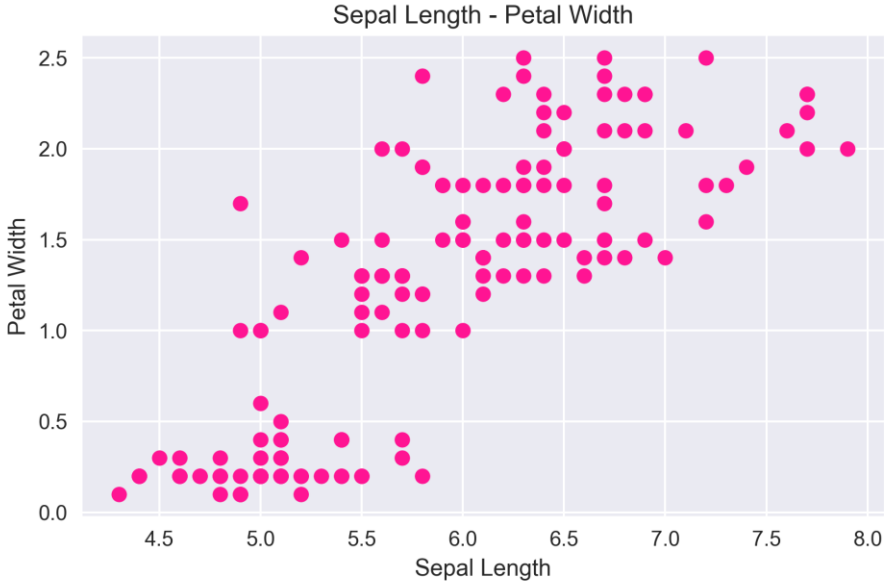
CASE 3

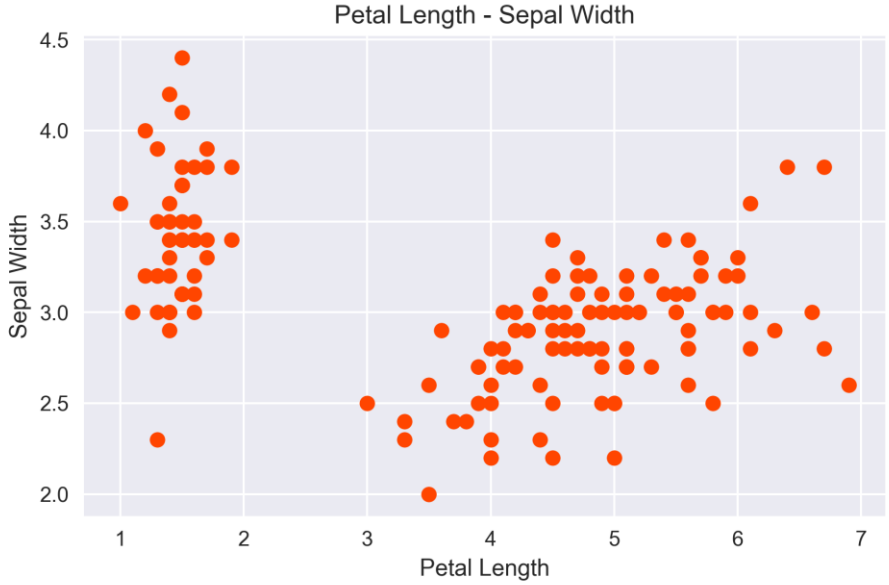

Pareto Front
HIGH
MEDIAN
LOW
Assets
High risk & return
Low risk & return
Median
0.004
0.002
0.000
−0.002
−0.004
−0.006
−0.008
Mean
0.001
0.002
0.003
0.004
0.005
Variance

CASE 4

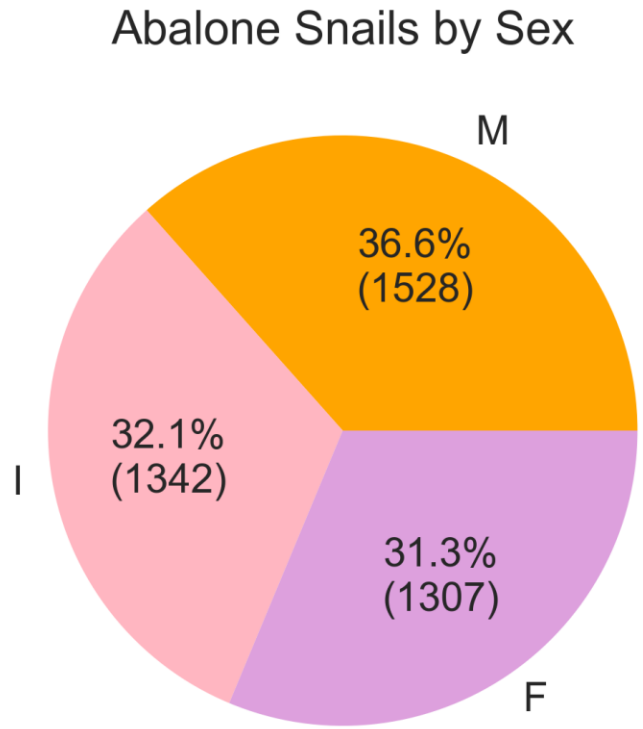

Sepal Length - Sepal Width
Sepal Width
Sepal Length
4.5
4.0
3.5
3.0
2.5
2.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0

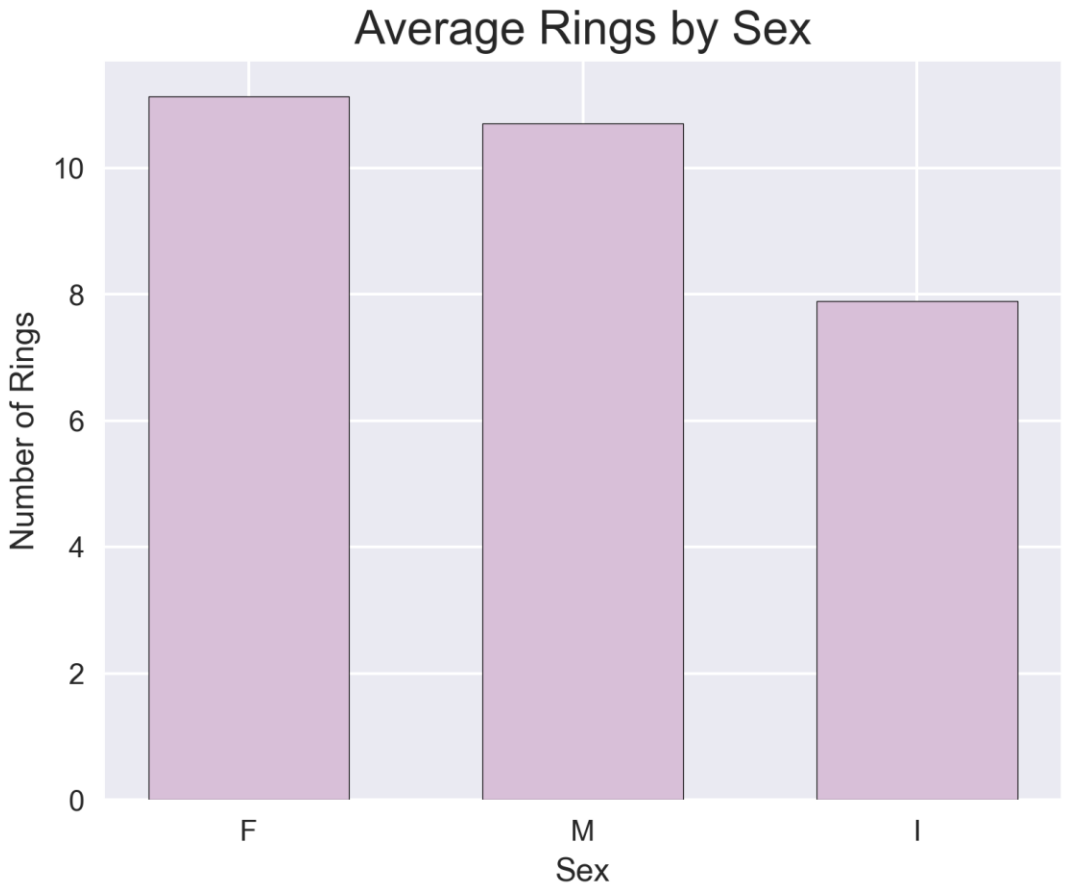

Petal Length - Petal Width
Petal Width
Petal Length
2.5
2.0
1.5
1.0
0.5
0.0
1
2
3
4
5
6
7


Sepal Length - Petal Width
Petal Width
Sepal Length
2.5
2.0
1.5
1.0
0.5
0.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0

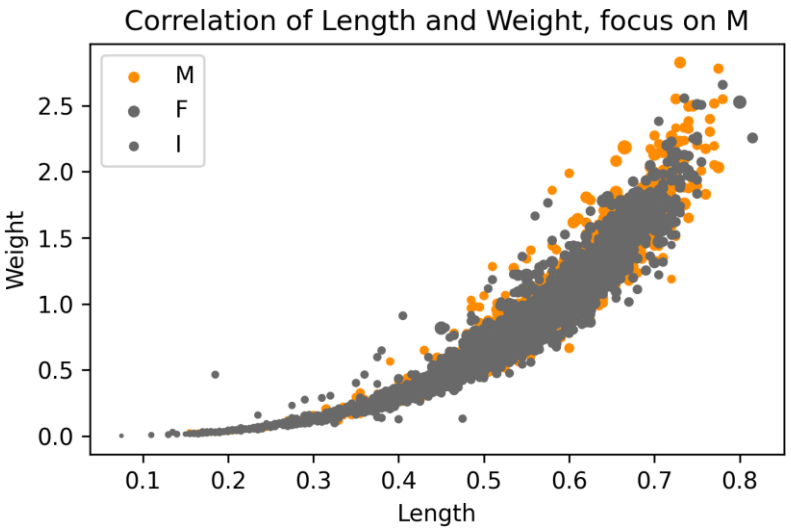

Petal Length - Sepal Width
Sepal Width
Petal Length
4.5
4.0
3.5
3.0
2.5
2.0
1
2
3
4
5
6
7

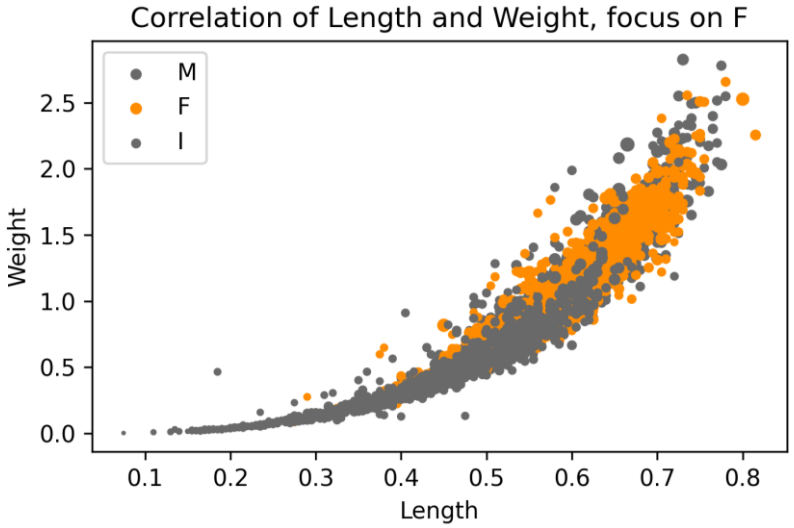
CASE 5

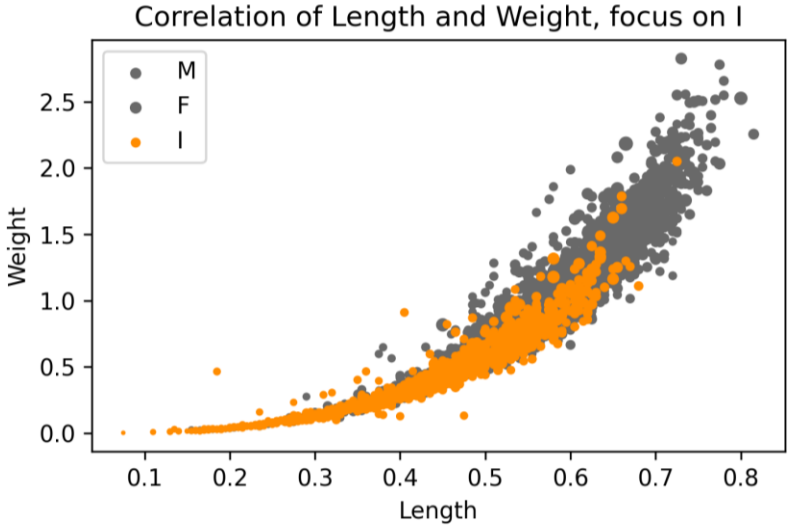

Abalone Snails by Sex
M
36.6%
(1528)
I
32.1%
(1342)
31.3%
(1307)
F


Average Rings by Sex
Number of Rings
0
2
4
6
8
10
F
M
I
Sex

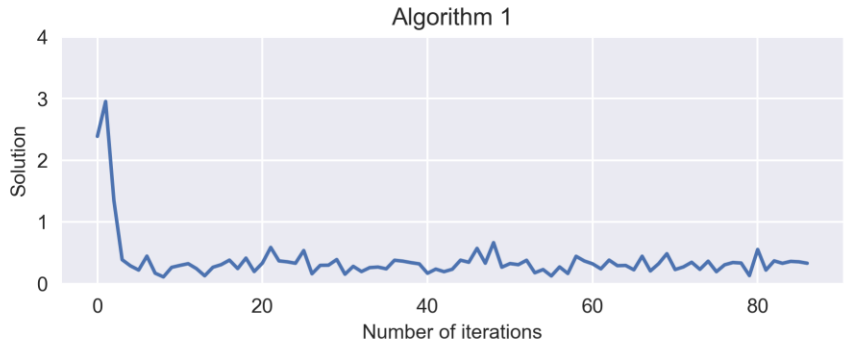
CASE 6

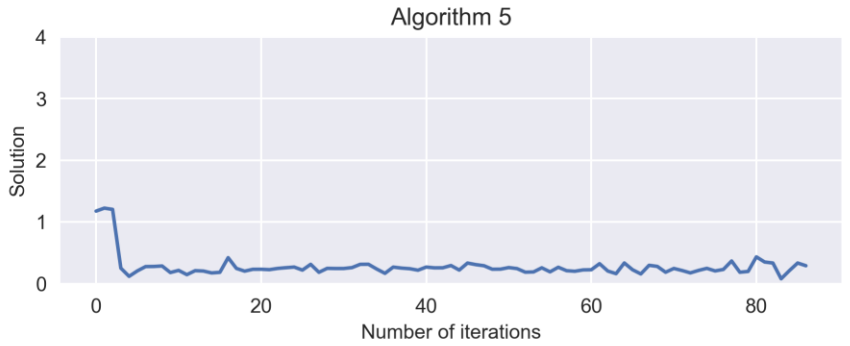

Correlation of Length and Weight, focus on M
M
F
I
Weight
Length
0.0
0.5
1.0
1.5
2.0
2.5
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8

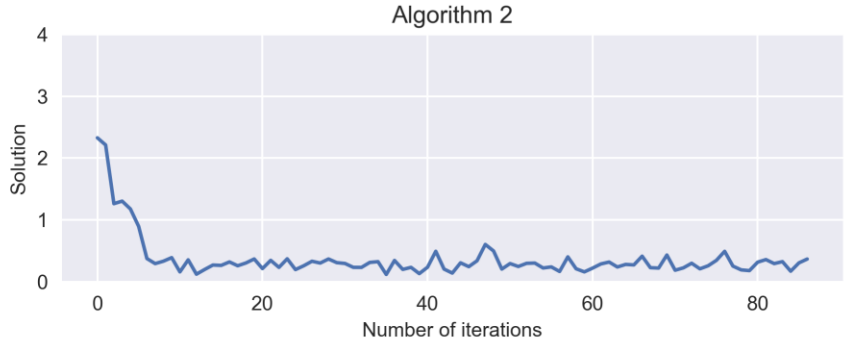

Correlation of Length and Weight, focus on F
M
F
I
Weight
Length
0.0
0.5
1.0
1.5
2.0
2.5
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8

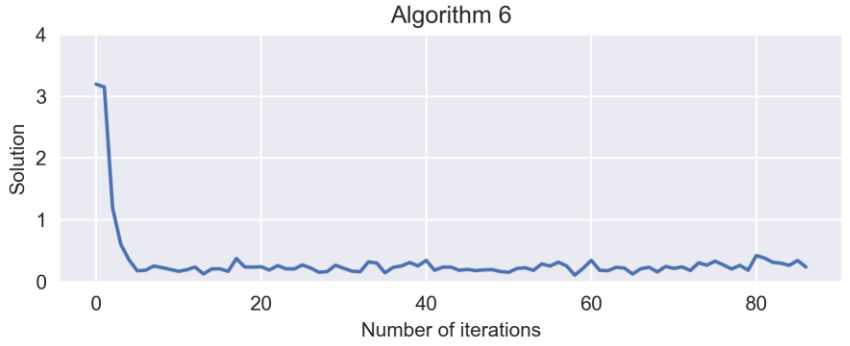

Correlation of Length and Weight, focus on I
M
F
I
Weight
Length
0.0
0.5
1.0
1.5
2.0
2.5
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8

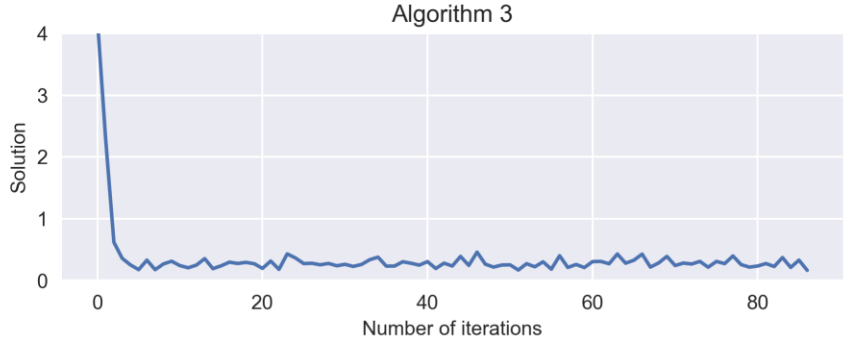
CASE 7

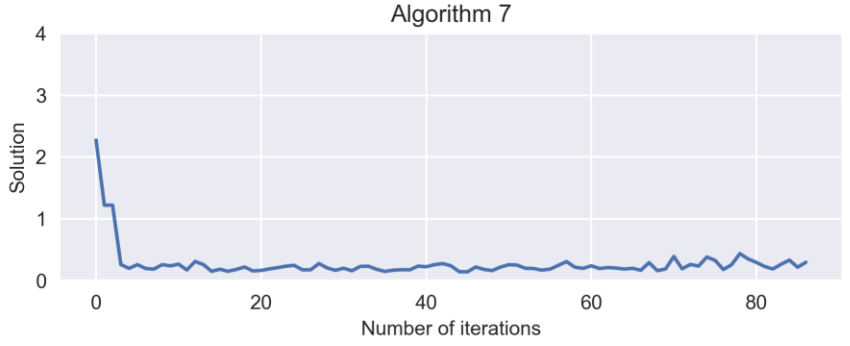

Algorithm 1
Solution
Number of iterations
0
1
2
3
4
0
20
40
60
80

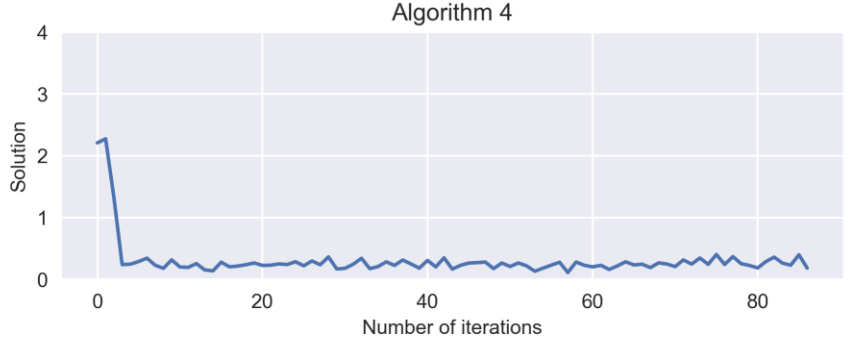

Algorithm 5
Solution
Number of iterations
0
1
2
3
4
0
20
40
60
80

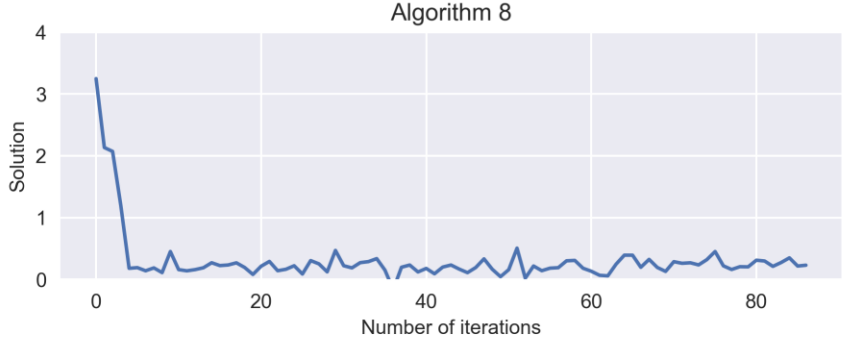

Algorithm 2
Solution
Number of iterations
0
1
2
3
4
0
20
40
60
80


Algorithm 6
Solution
Number of iterations
0
1
2
3
4
0
20
40
60
80

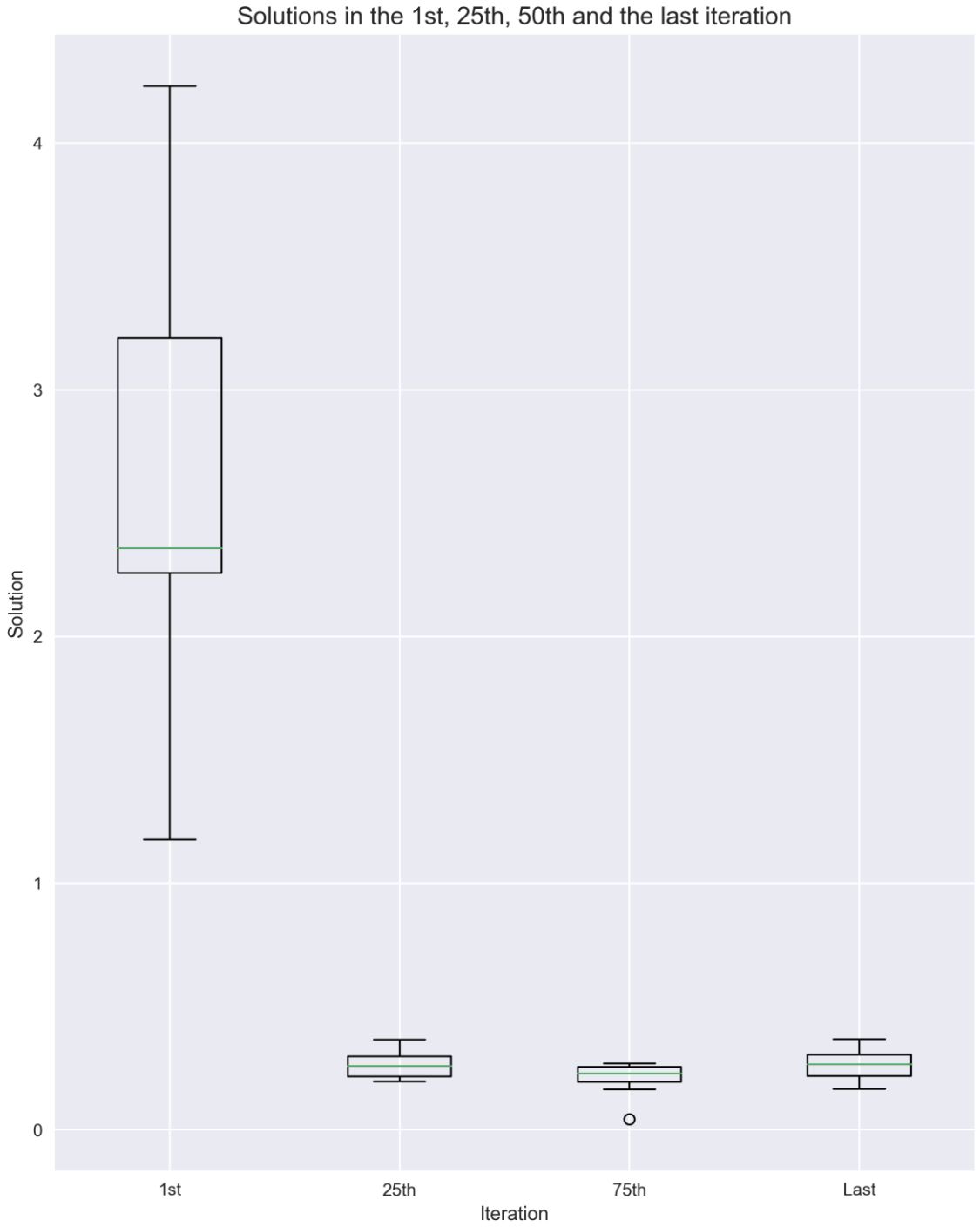

Algorithm 3
Solution
Number of iterations
0
1
2
3
4
0
20
40
60
80


Algorithm 7
Solution
Number of iterations
0
1
2
3
4
0
20
40
60
80

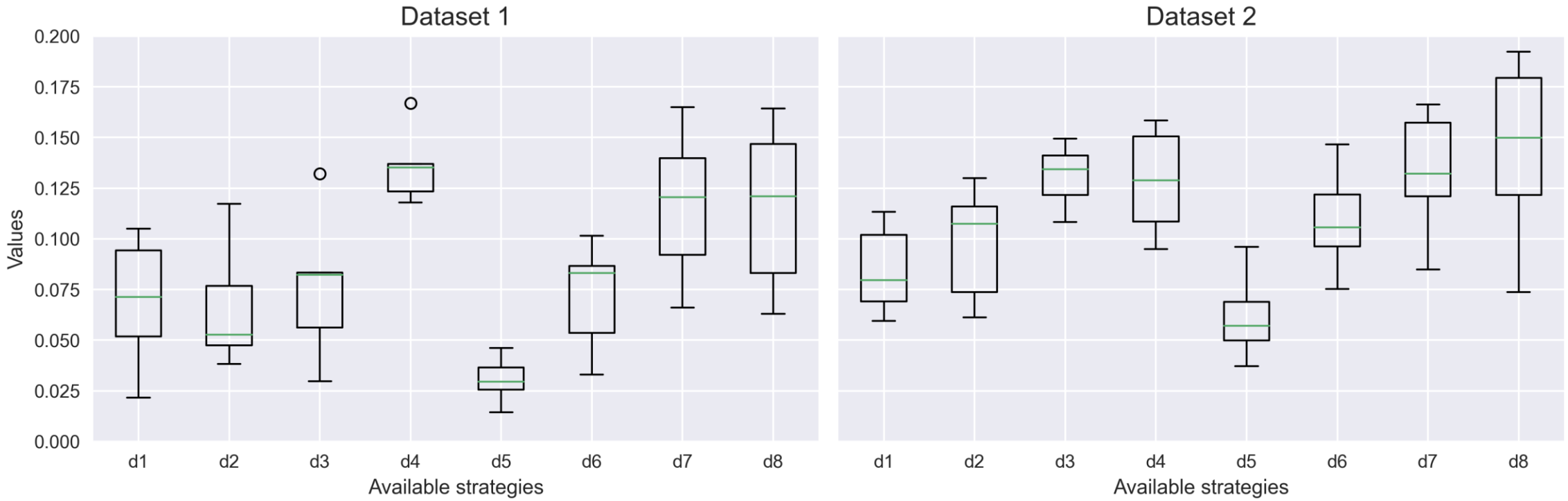

Algorithm 4
Solution
Number of iterations
0
1
2
3
4
0
20
40
60
80


Algorithm 8
Solution
Number of iterations
0
1
2
3
4
0
20
40
60
80

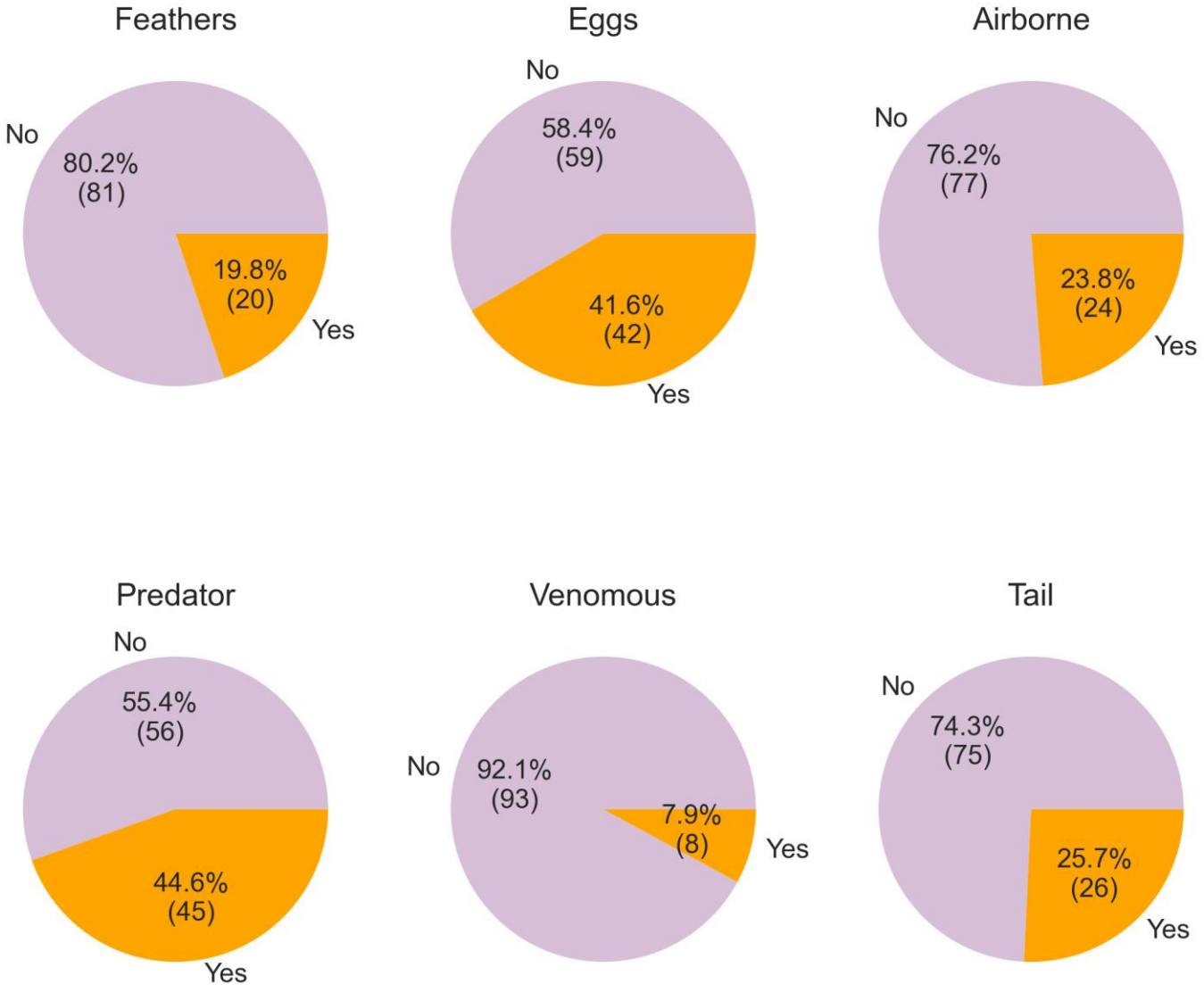
CASE 8


Solutions in the 1st, 25th, 50th and the last iteration
Solution
0
1
2
3
4
1st
25th
75th
Last
Iteration

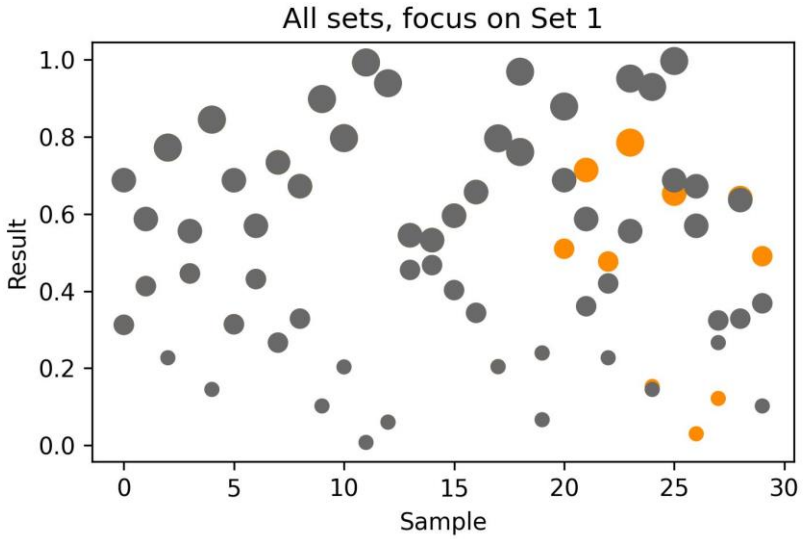
CASE 9

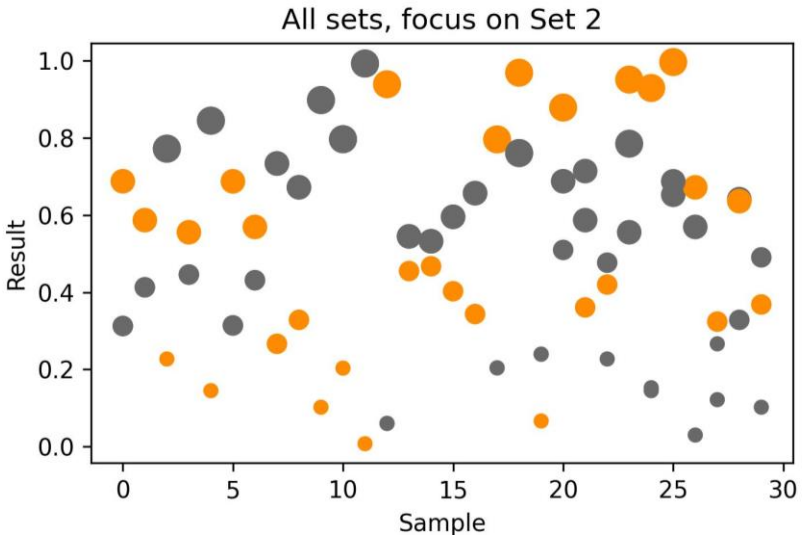

Dataset 1
Dataset 2
Values
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
d1
d2
d3
d4
d5
d6
d7
d8
Available strategies

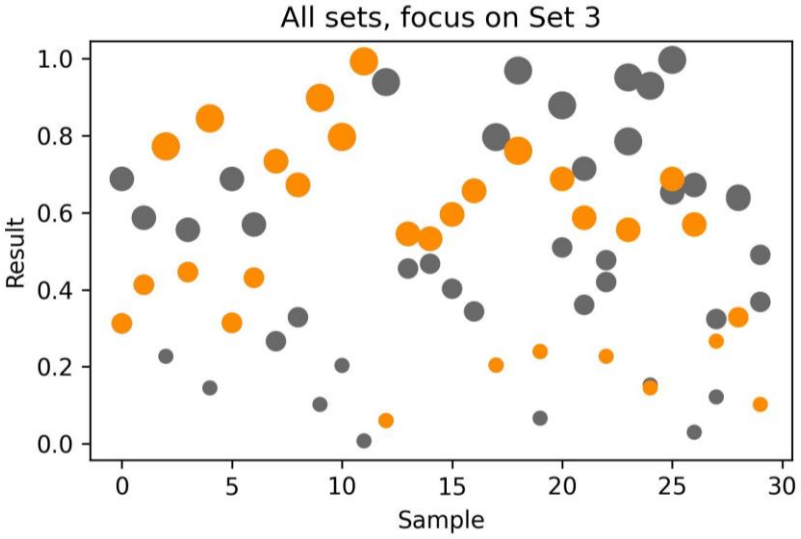
CASE 10


Feathers
No
80.2%
(81)
19.8%
(20)
Yes
Eggs
No
58.4%
(59)
41.6%
(42)
Yes
Airborne
No
76.2%
(77)
23.8%
(24)
Yes
Predator
No
55.4%
(56)
44.6%
(45)
Yes
Venomous
No
92.1%
(93)
7.9%
(8)
Yes
Tail
No
74.3%
(75)
25.7%
(26)
Yes

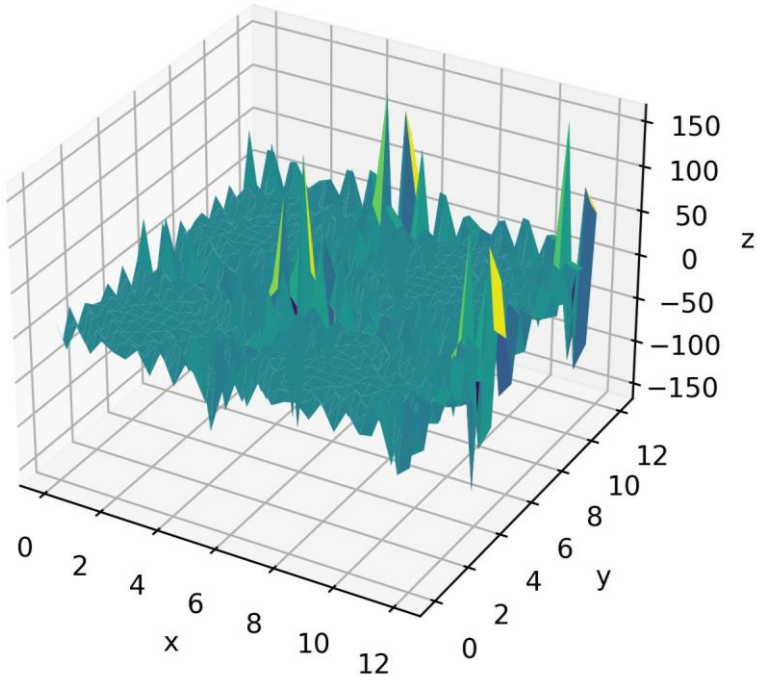
CASE 11

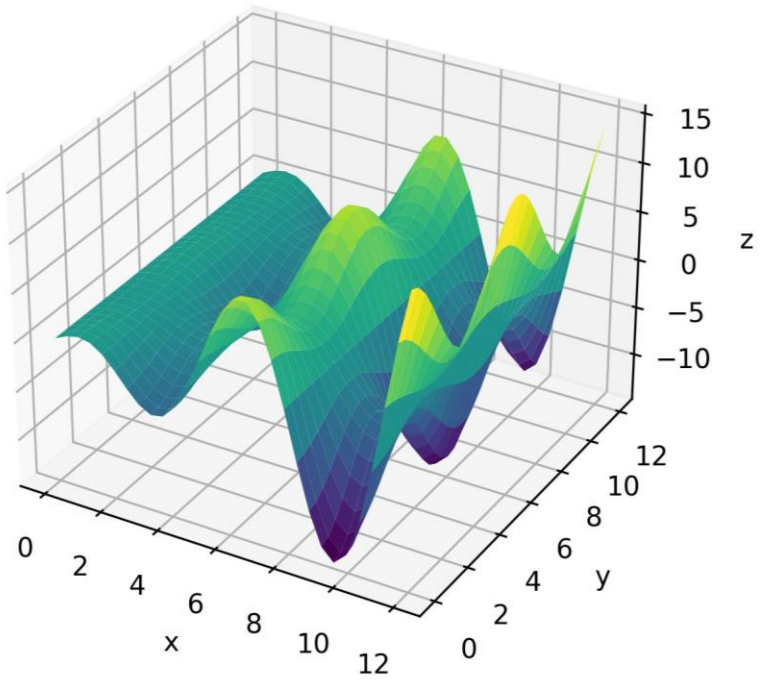

All sets, focus on Set 1
Result
Sample
0.0
0.2
0.4
0.6
0.8
1.0
0
5
10
15
20
25
30

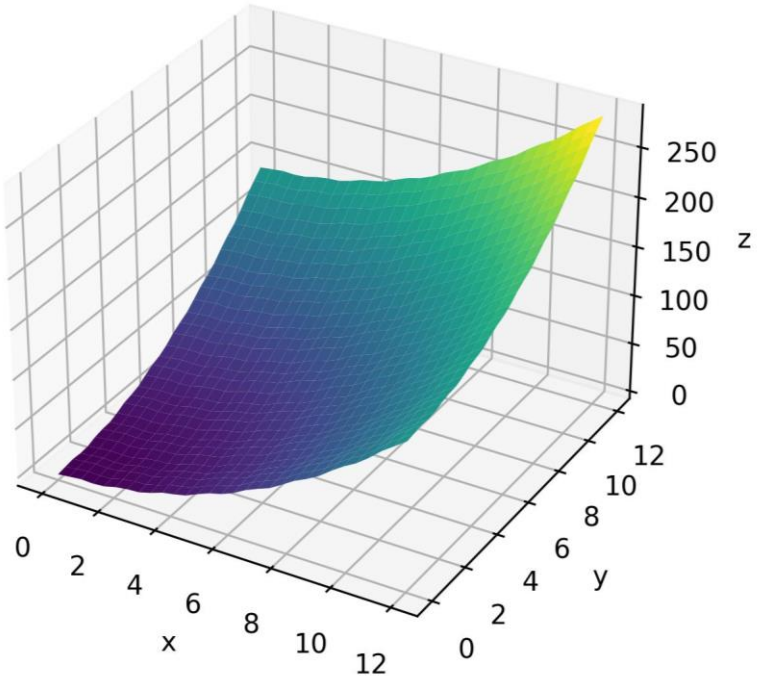

All sets, focus on Set 2
Result
Sample
0.0
0.2
0.4
0.6
0.8
1.0
0
5
10
15
20
25
30


All sets, focus on Set 3
Result
Sample
0.0
0.2
0.4
0.6
0.8
1.0
0
5
10
15
20
25
30

CASE 12


150
100
50
0
−50
−100
−150
z
0
2
4
6
8
10
12
x
y


15
10
5
0
−5
−10
z
0
2
4
6
8
10
12
x
y


250
200
150
100
50
0
z
0
2
4
6
8
10
12
x
y

Jarek Krzysztofik
IBM Certified Data Analyst
SQL | Python | Excel | PowerBI

THANK YOU

Code and input data can be found within this repository.

I will be happy to get in touch on LinkedIn
www.linkedin.com/in/jarek-krzysztofik-ds-bi-ml