Optimisation scenarios

Quiz, 6 questions

6/6 points (100%)

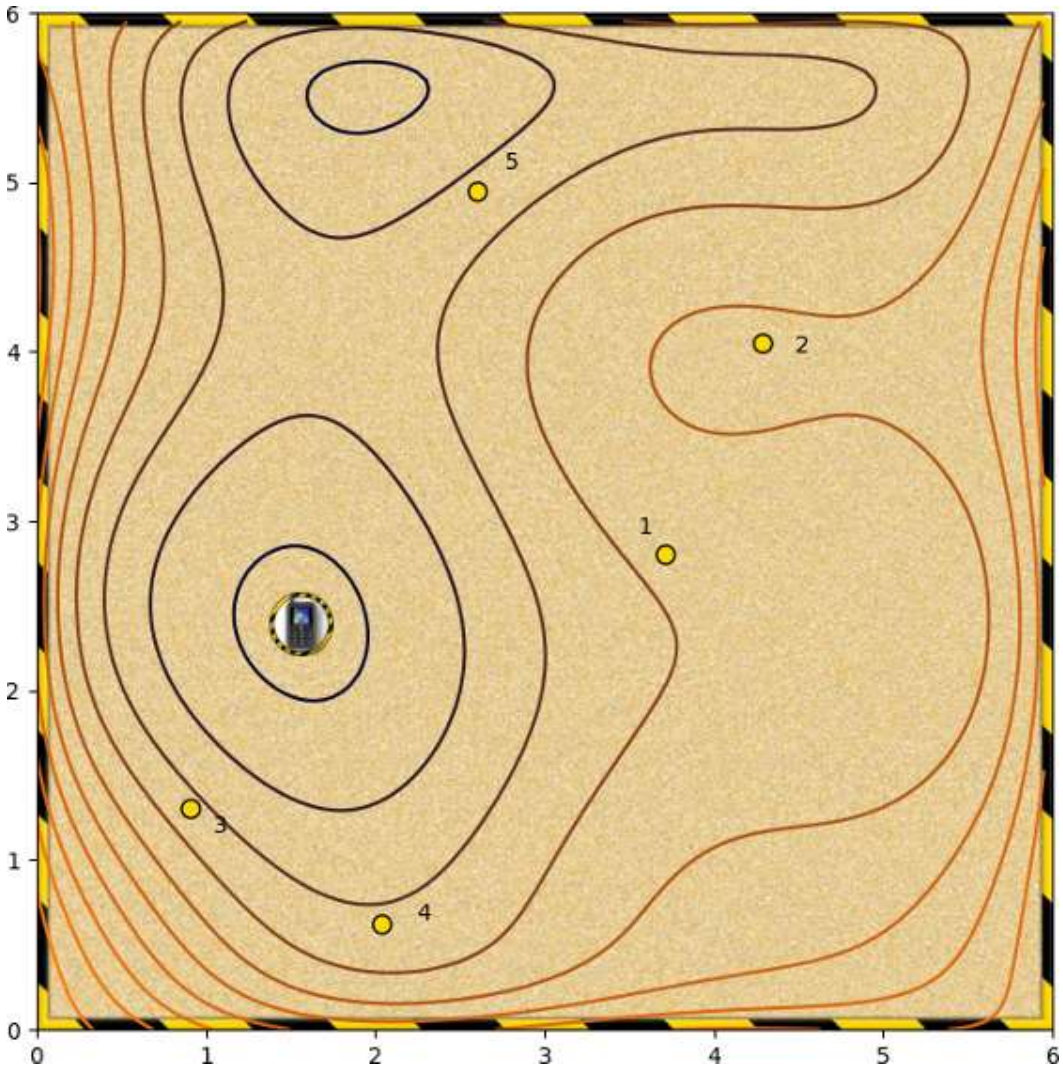
Congratulations! You passed!

Next Item

1 / 1 point

1.

Given the following contour plot,



Which starting points (from 1 to 5) are likely to converge to the global minimum (shown by the mobile phone) when using a steepest descent algorithm?

- [x] Starting point 1

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Quiz, 6 questions

6/6 points (100%)

Correct
In this case, the algorithm descends smoothly down the slope.

- [ ] Starting point 2

Un-selected is correct

- [x] Starting point 3

Correct
In this case, the algorithm descends smoothly down the slope.

- [x] Starting point 4

Correct
In this case, the algorithm descends smoothly down the slope.

- [ ] Starting point 5

Un-selected is correct

- [ ] None of the above

Un-selected is correct

---

1 / 1 point

2.

Again, which starting points converge to the global minimum?

Optimisation scenarios

Quiz, 6 questions

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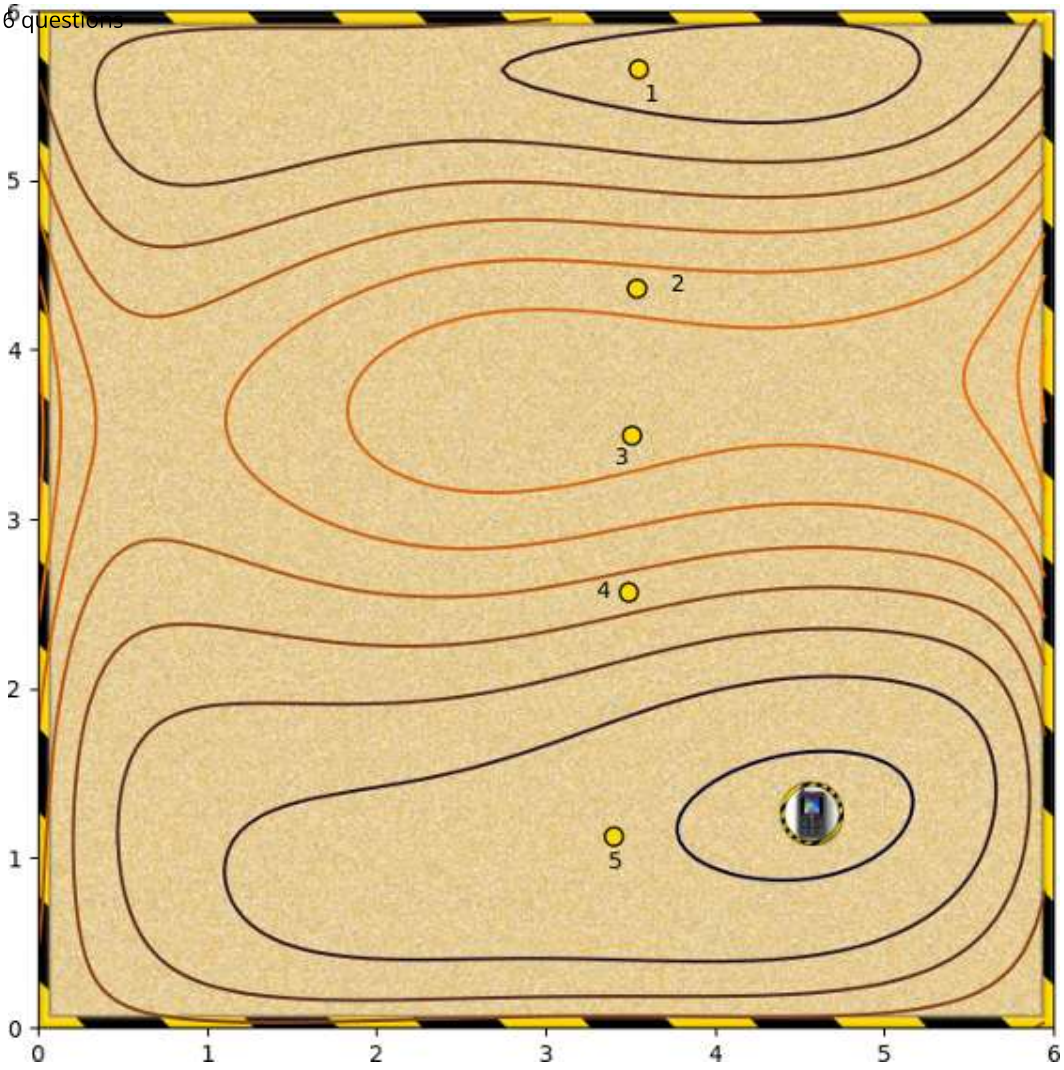

- [ ] Starting point 1

Un-selected is correct

- [ ] Starting point 2

Un-selected is correct

- [x] Starting point 3

Correct

This should converge to the global minimum.

- [x]

Starting point 4

Correct

This should converge to the global minimum.

Starting point 5

Correct

This should converge to the global minimum.

None of the above

Un-selected is correct

1 / 1 point

3.

Which starting points converge to the global minimum?

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Quiz, 6 questions

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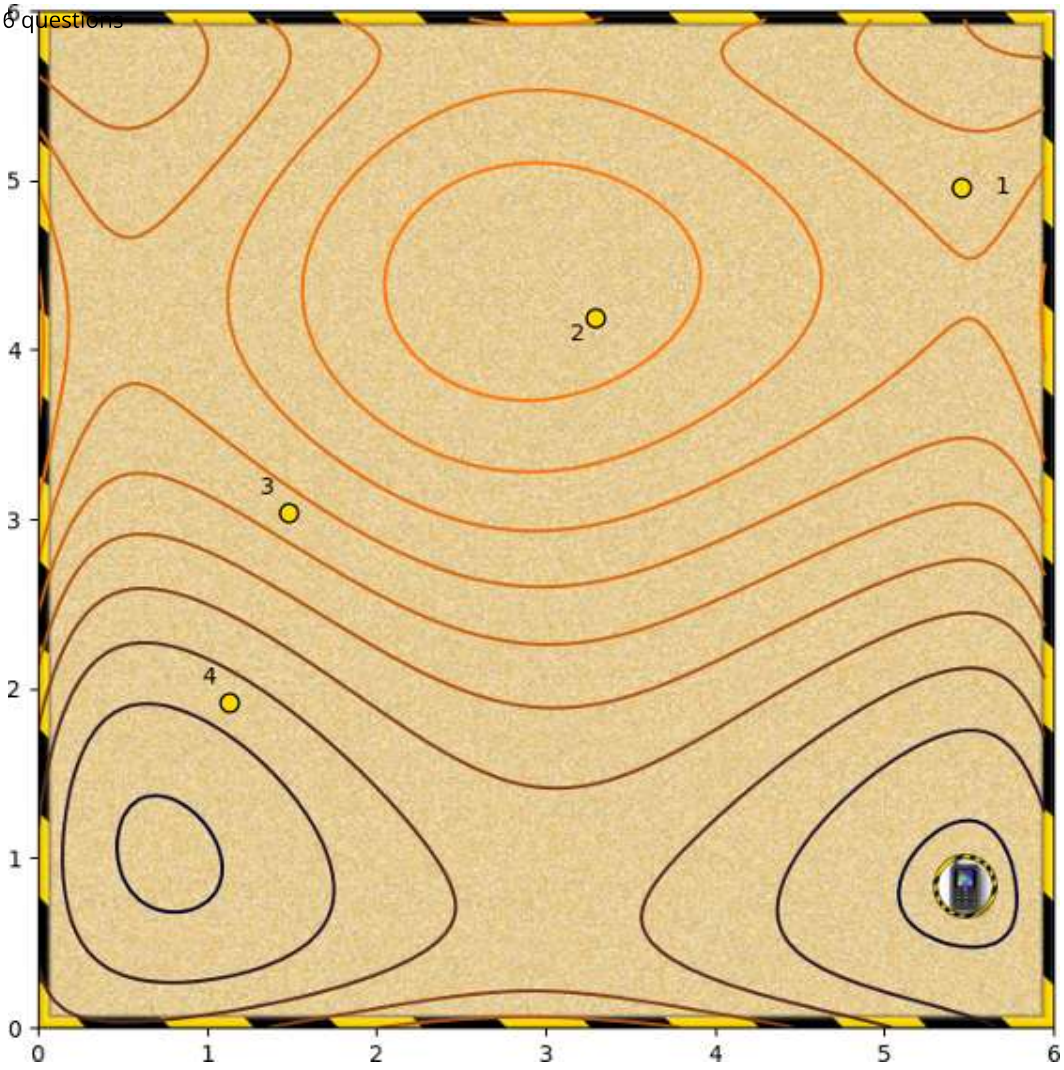

- [ ] Starting point 1

Un-selected is correct

- [x] Starting point 2

Correct

From here, the algorithm will descend the hill to the global minimum.

- [ ] Starting point 3

Un-selected is correct

- [ ]

Starting point 4

Optimisation scenarios

Quiz, 6 questions

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Un-selected is correct

None of the above

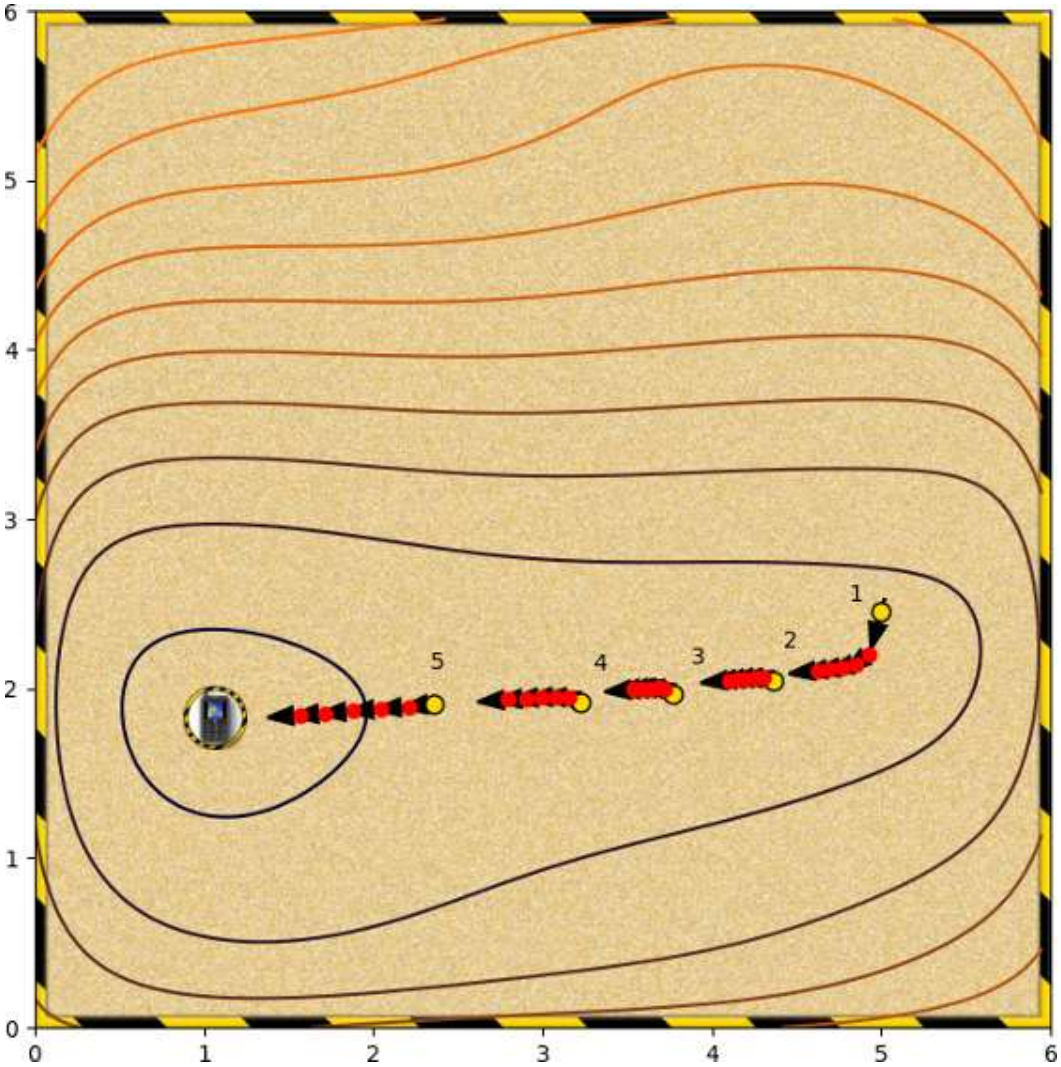
Un-selected is correct

---

1 / 1 point

4.

What's happening in this gradient descent?



The algorithm is getting stuck near saddle points.

6/6 points (100%)

The algorithm is getting stuck near local minima.

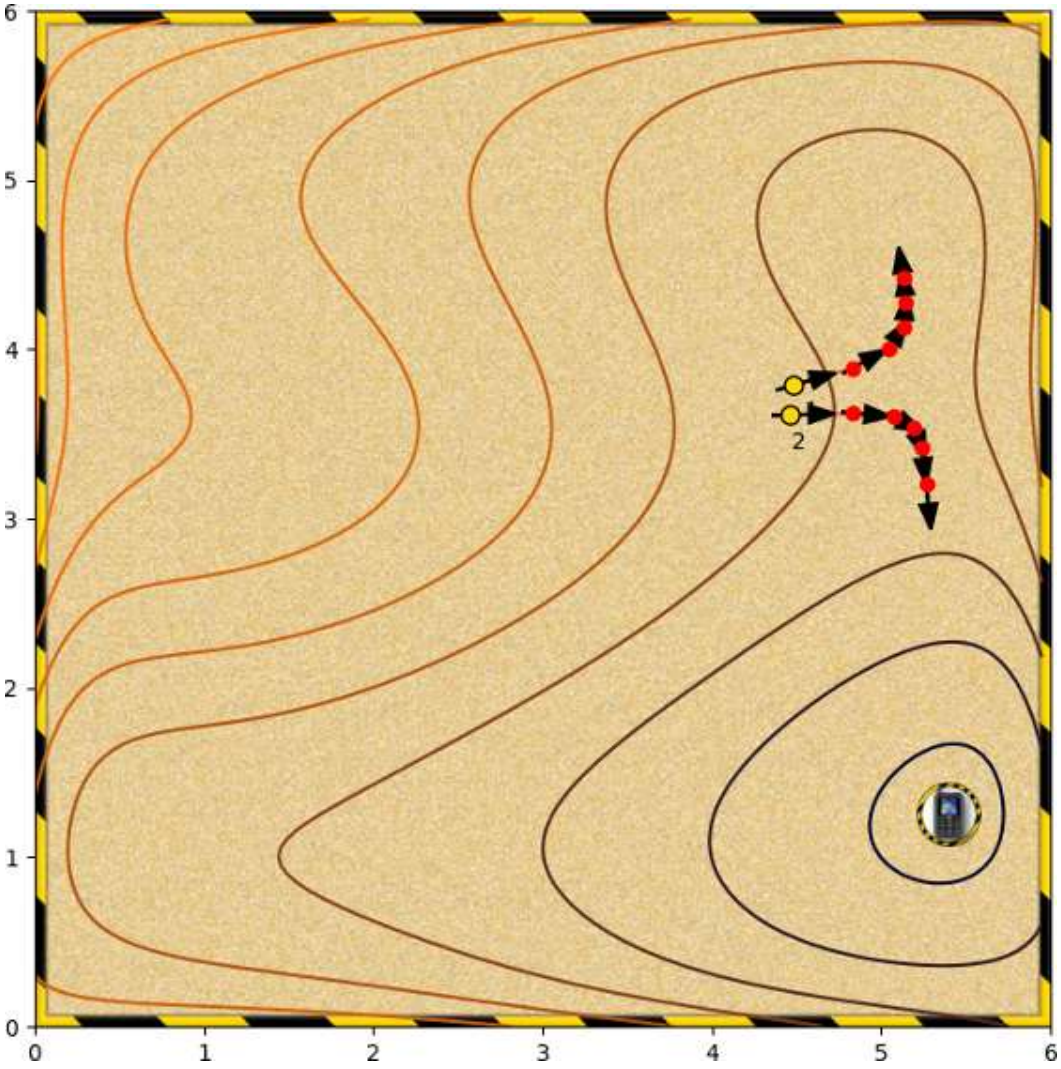
The global minimum is in a wide and flat basin, so convergence is slow.

Correct
This could be improved by increasing the aggression.

None of the other options.

1 / 1 point

5.
What is happening here?



None of the other options.

Optimisation scenarios

Quiz, 6 questions

6/6 points (100%)

The algorithm is passing either side of a saddle point.

Correct

The algorithm is passing either side of a local minimum.

There is noise in the system.

The algorithm is passing either side of a local maximum.

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1 / 1 point

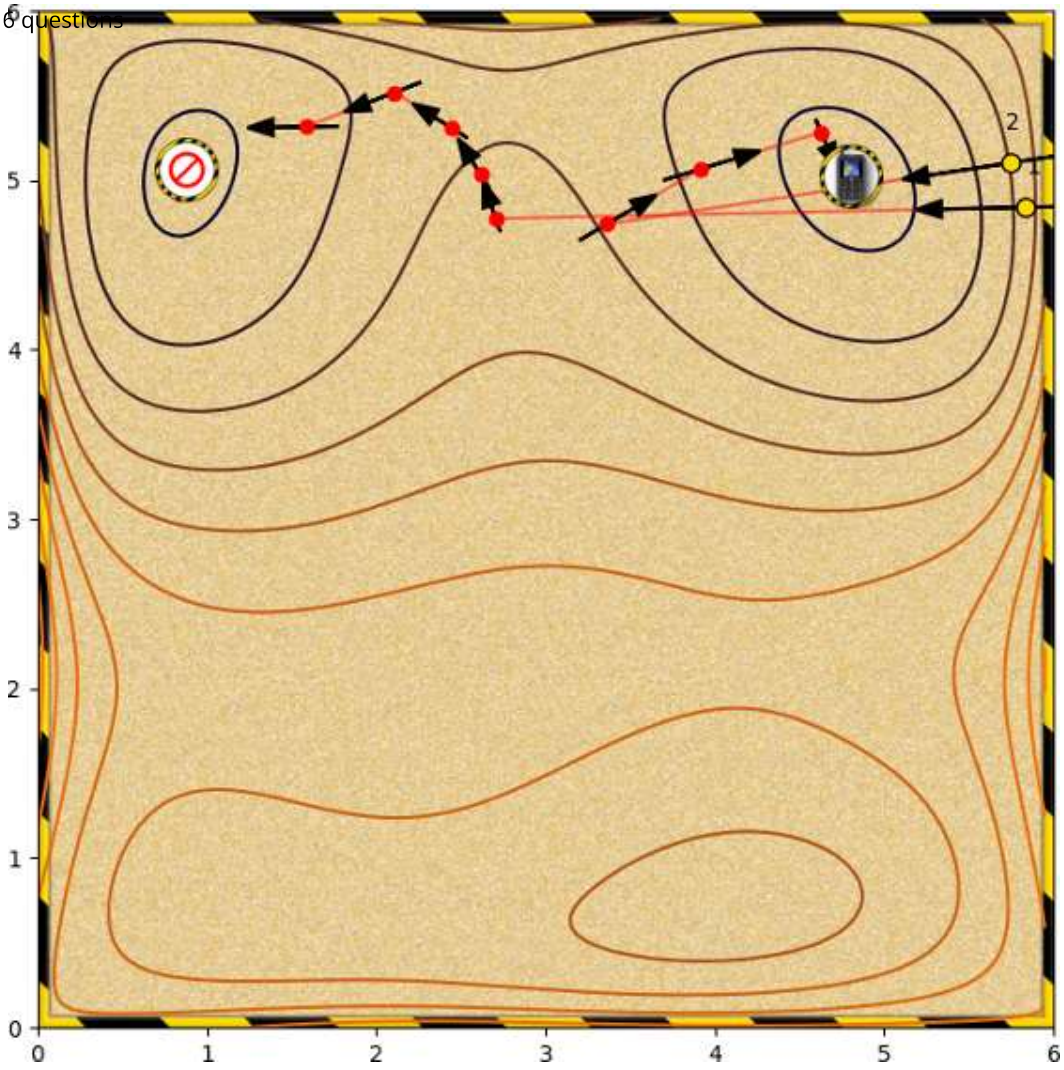
6.

What is happening here?

Optimisation scenarios

Quiz, 6 questions

6/6 points (100%)



- None of the other options.
- The marked points are saddle points.
- There is noise in the system
- The Jacobian at the starting point is very large.

Correct

This is causing the algorithm to overshoot. In one case into a different basin.

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