

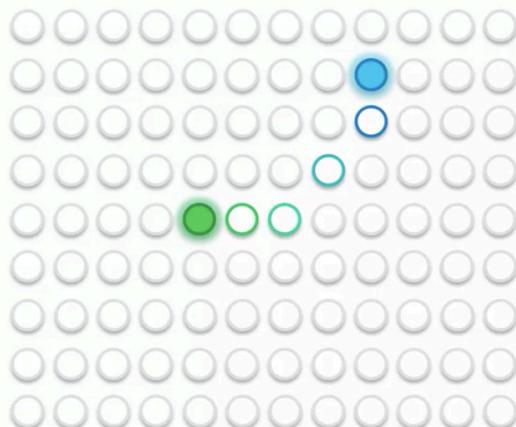
How do SOMs learn?

How Do SOMs Learn? (Part 2)

Deep Learning A-Z

© SuperDataScience

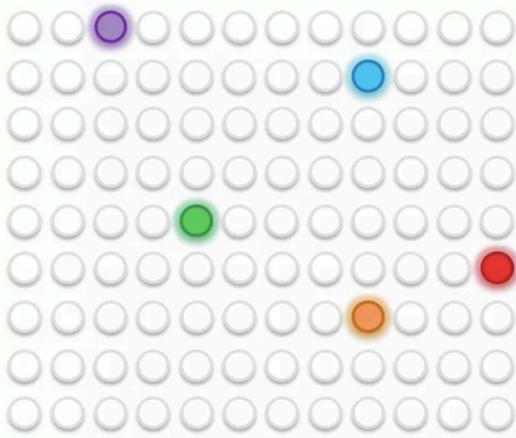
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

How Do SOMs Learn?

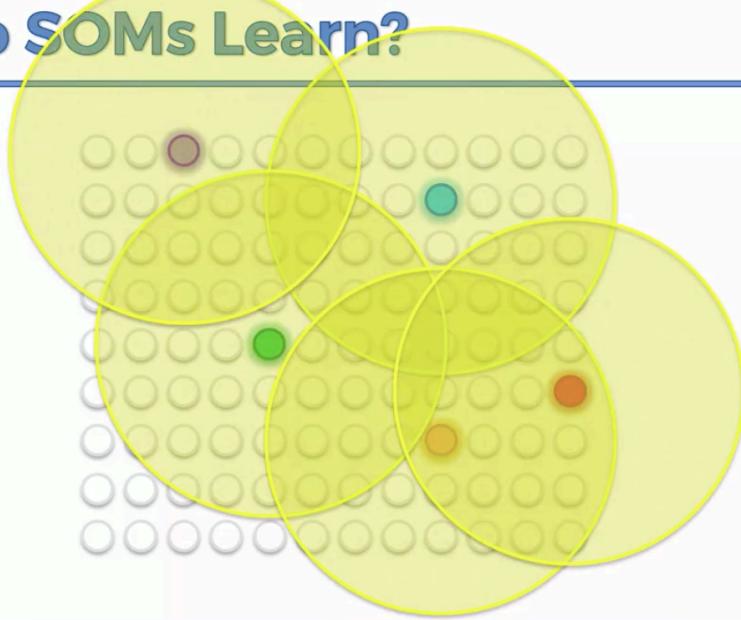


Deep Learning A-Z

© SuperDataScience

5 BMU

How Do SOMs Learn?

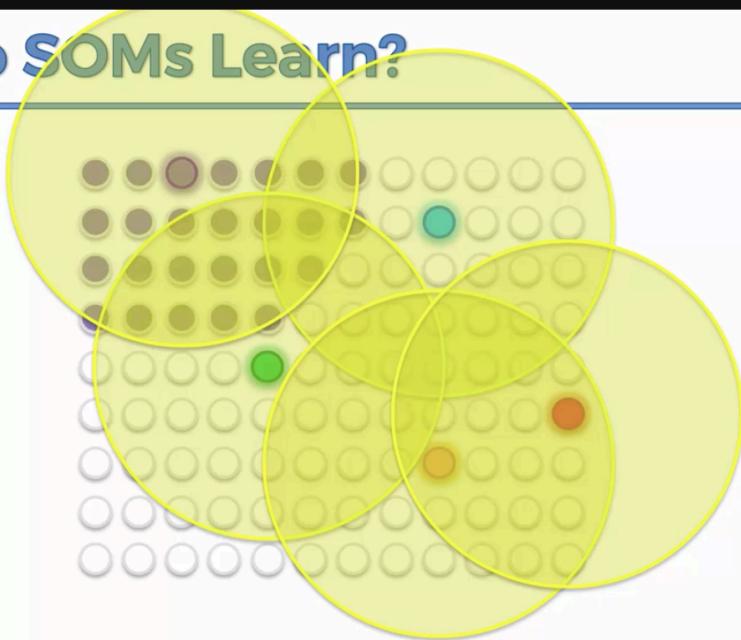


Deep Learning A-Z

© SuperDataScience

If you notice there are some nodes that is not inside the radius, in reality it's not like this. We usually choose the radius big enough so all nodes going to be included.

How Do SOMs Learn?

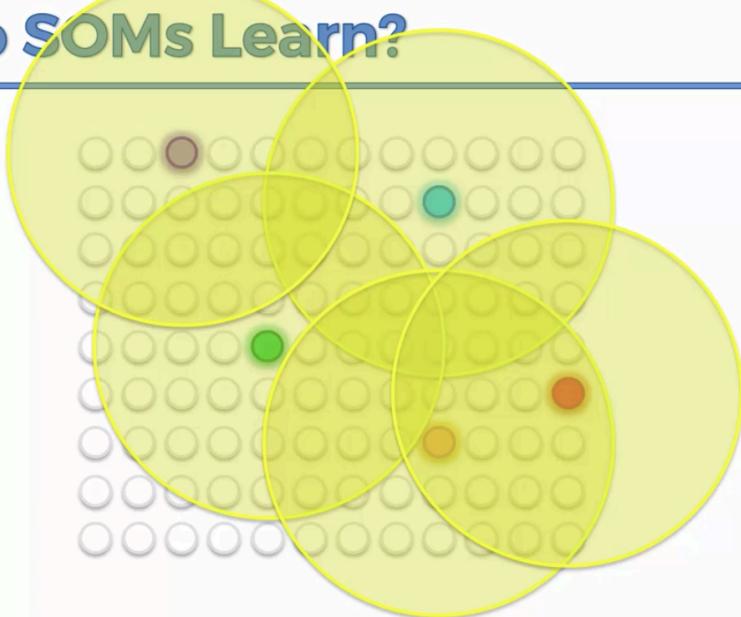


Deep Learning A-Z

© SuperDataScience

In here the purple nodes are updated and so it drags them along with itself.

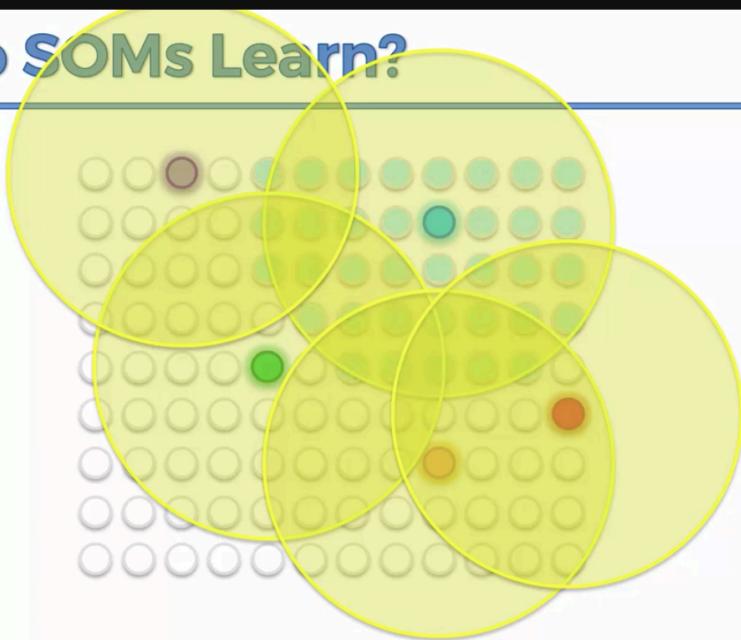
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

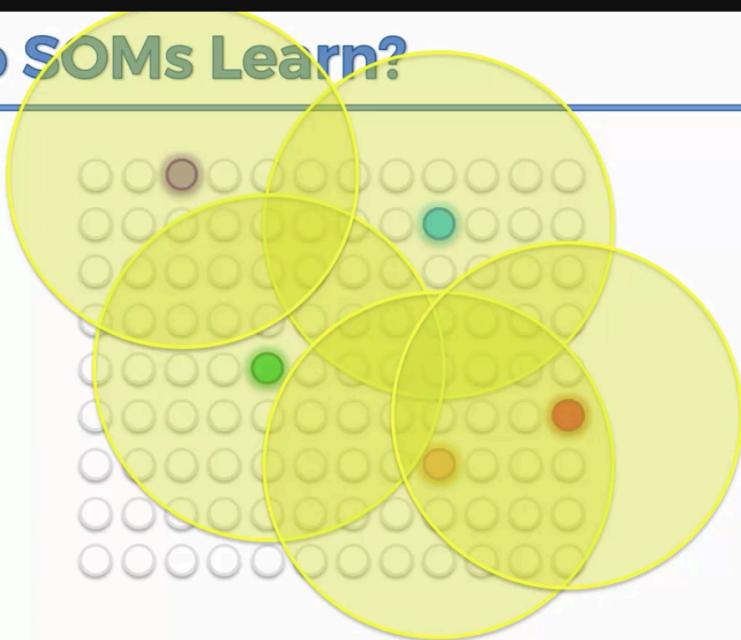
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

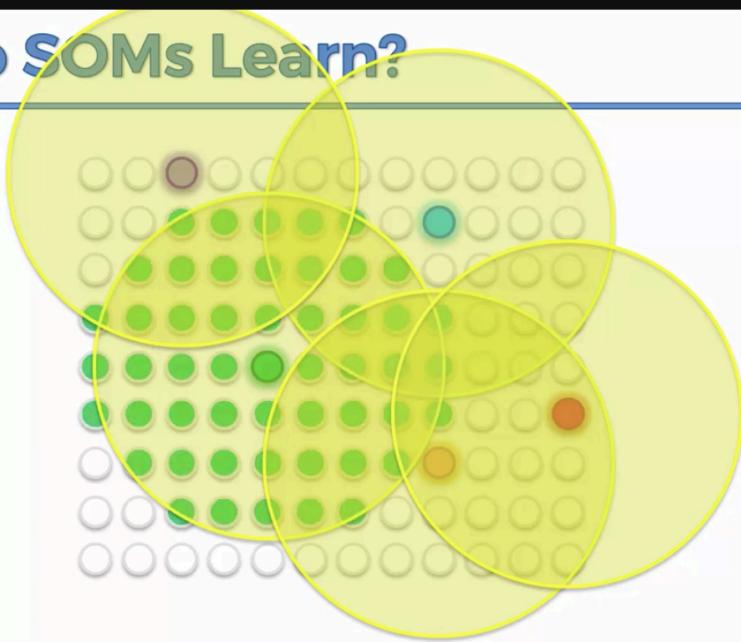
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

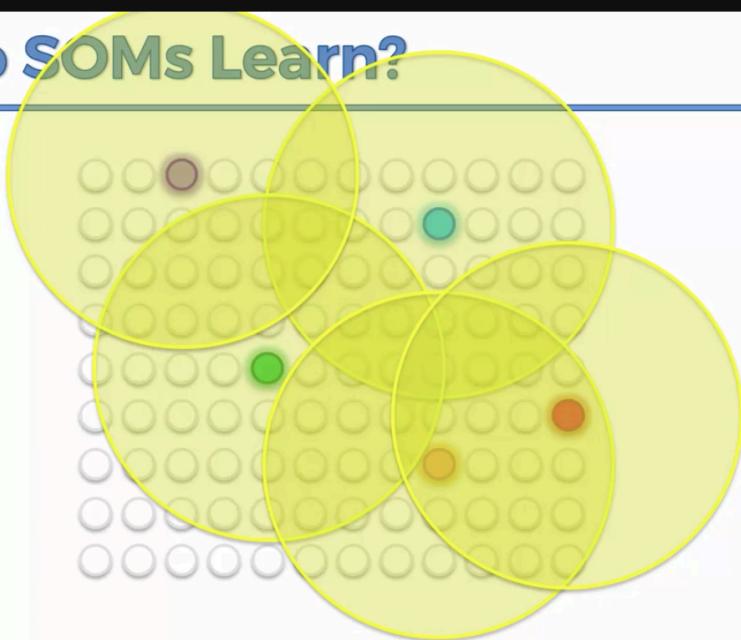
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

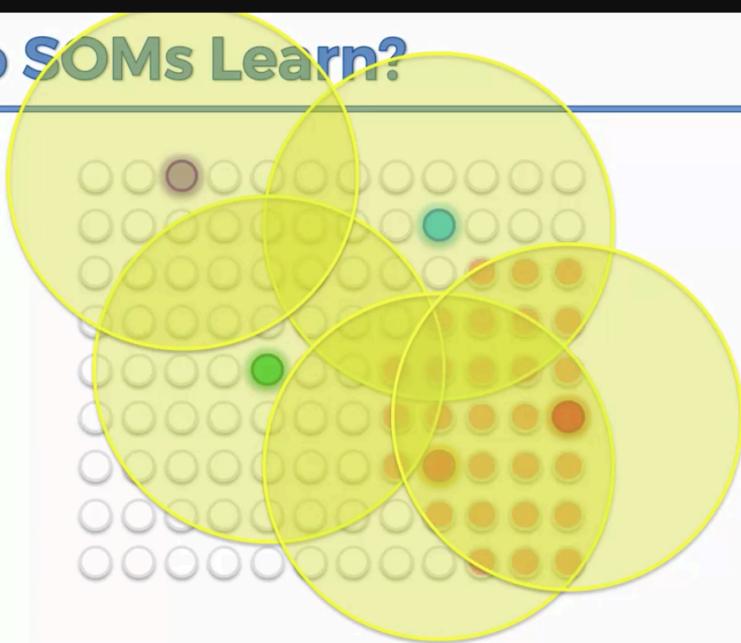
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

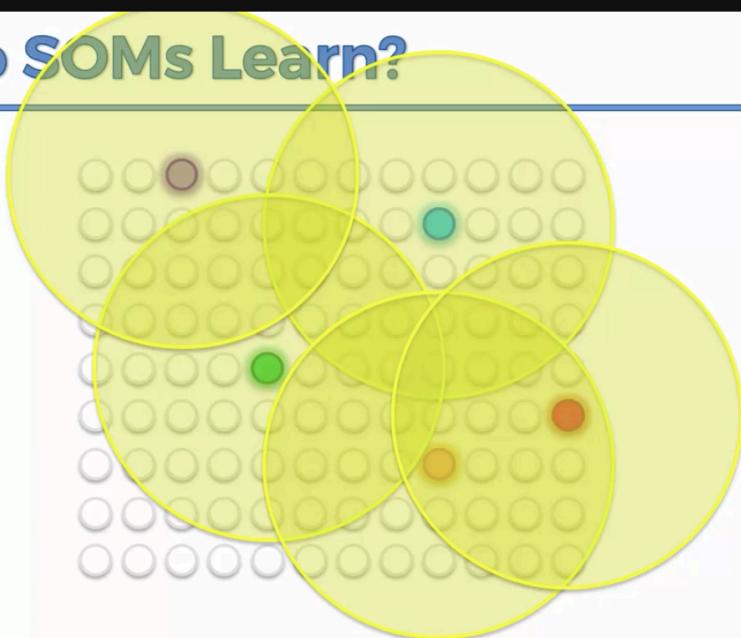
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

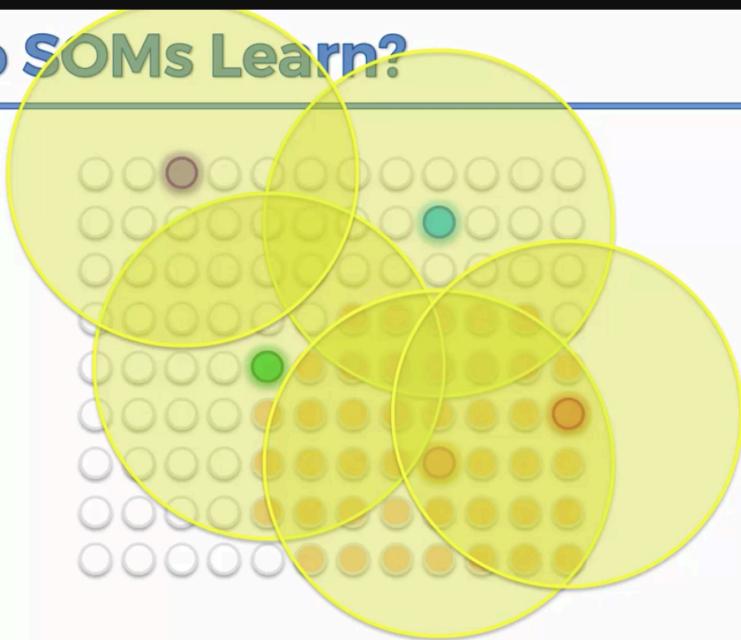
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

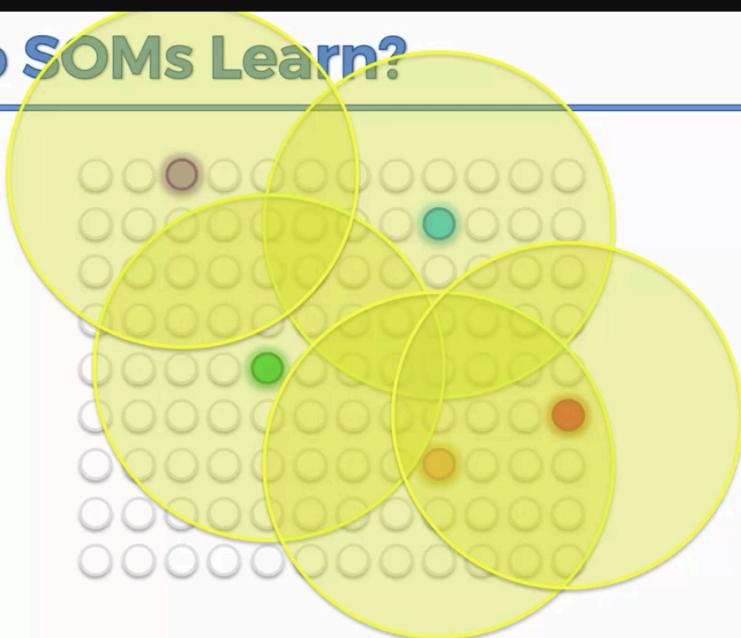
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

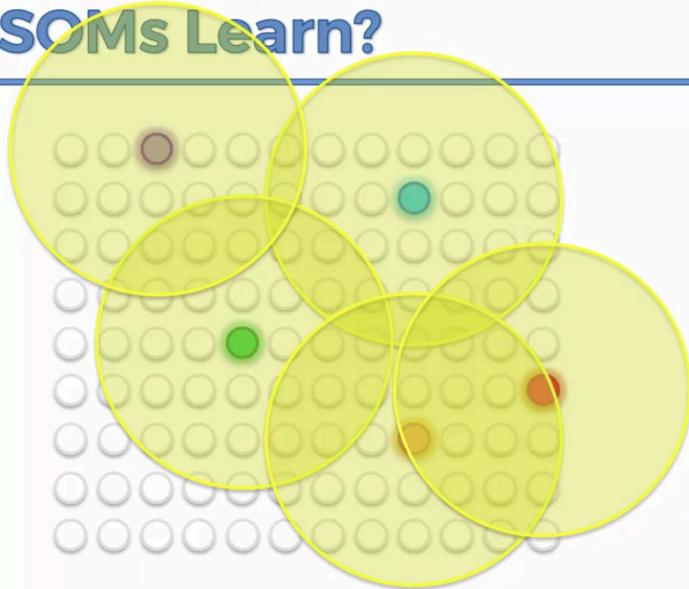
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

How Do SOMs Learn?

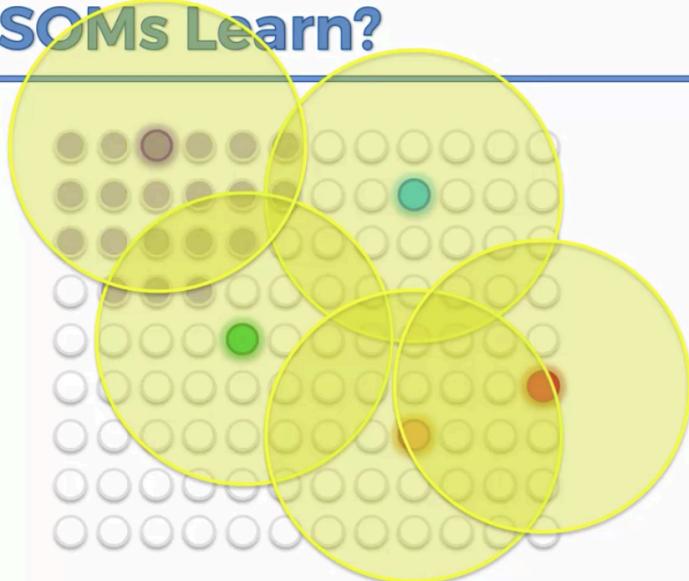


Deep Learning A-Z

© SuperDataScience

For our next iteration, the radius will shrink.

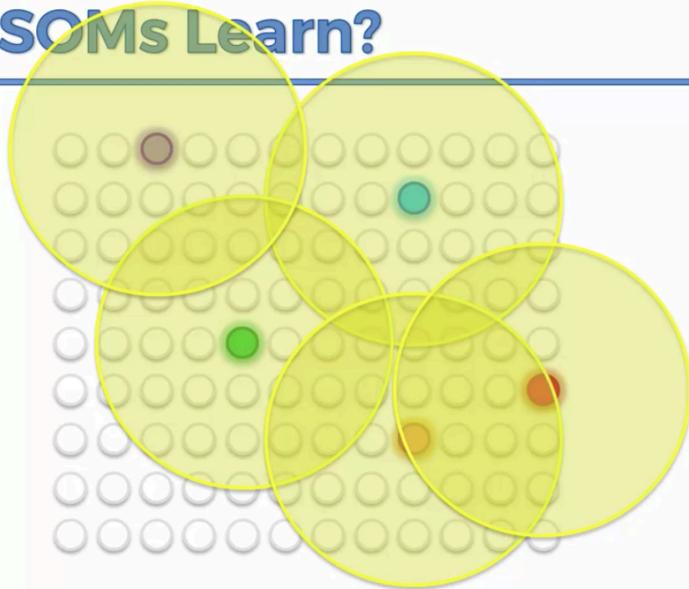
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

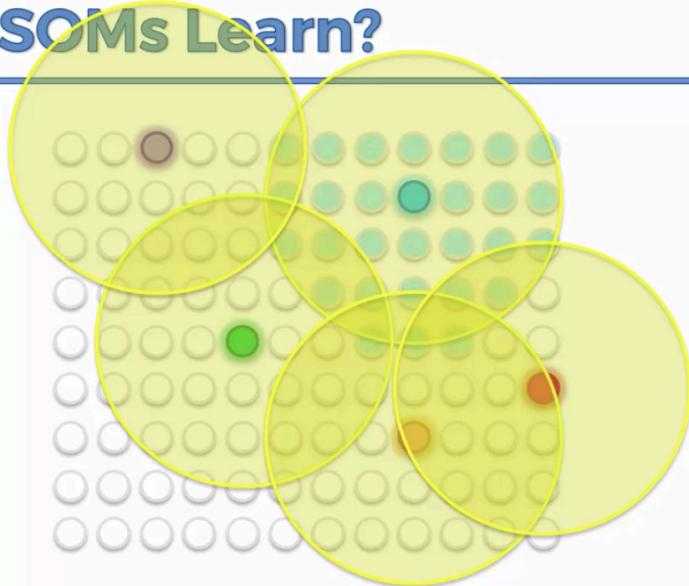
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

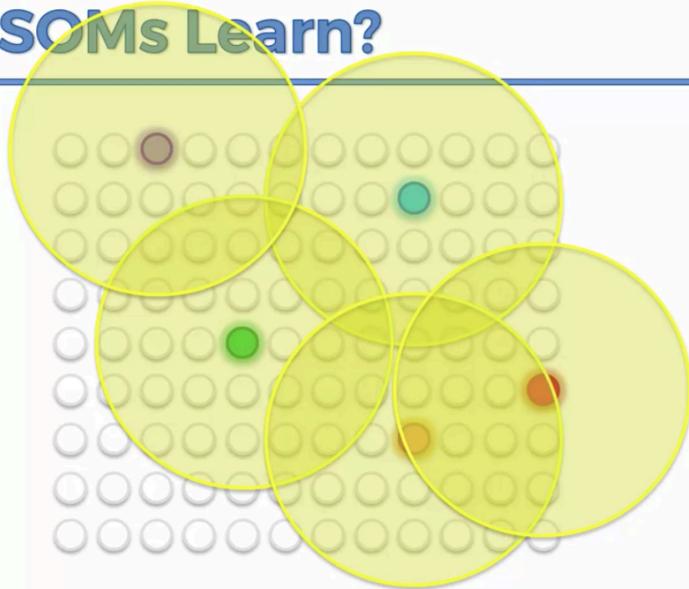
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

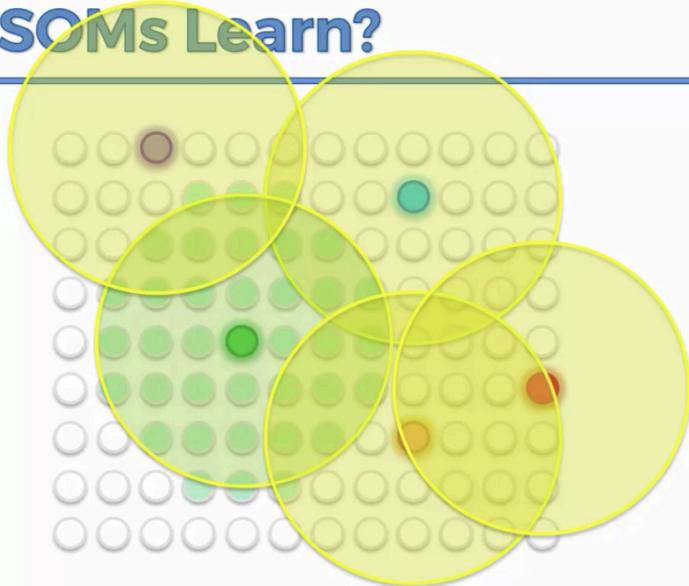
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

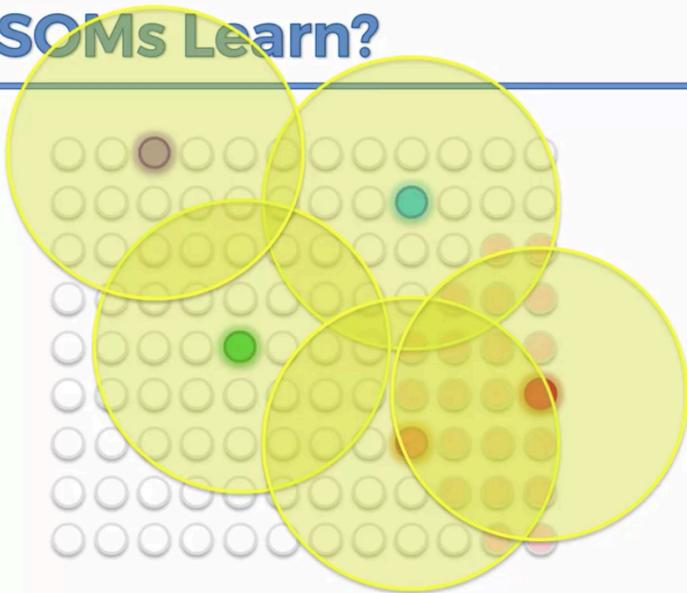
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

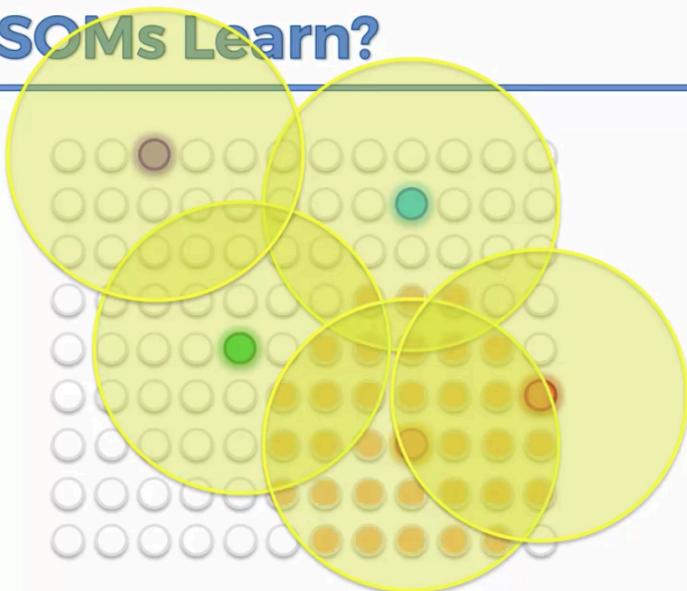
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

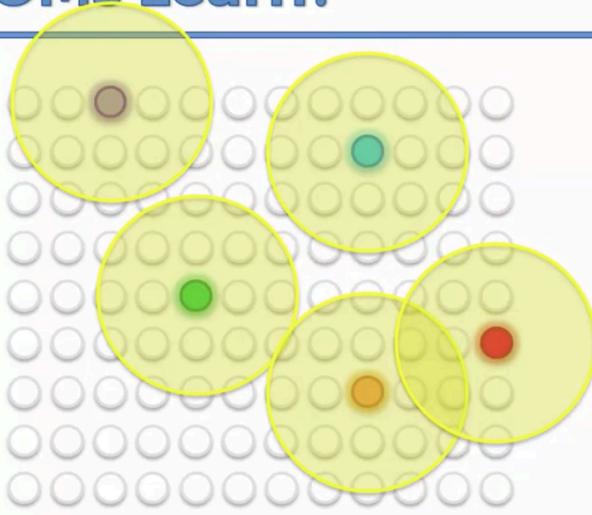
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

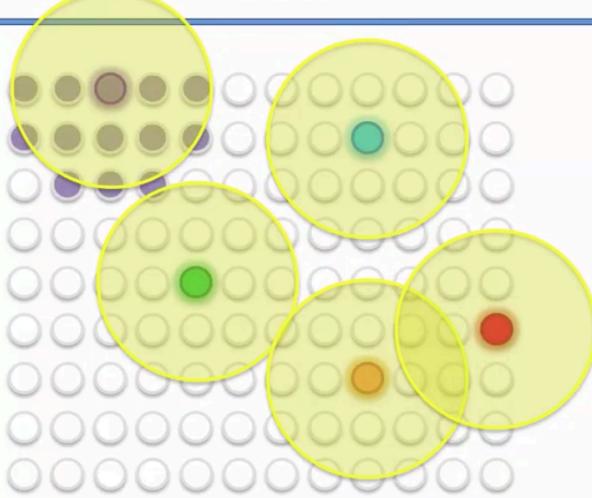
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

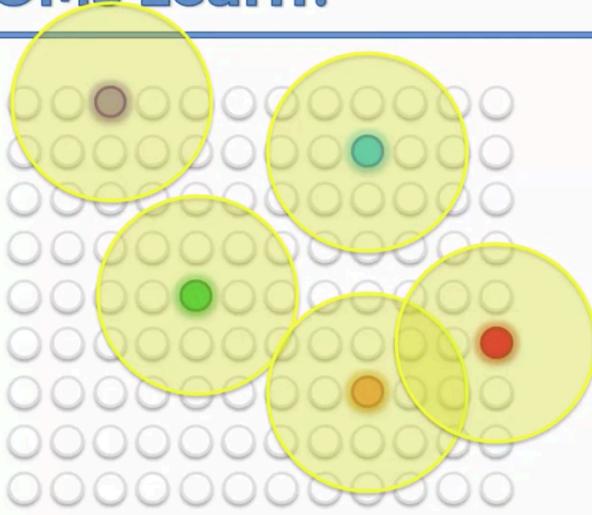
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

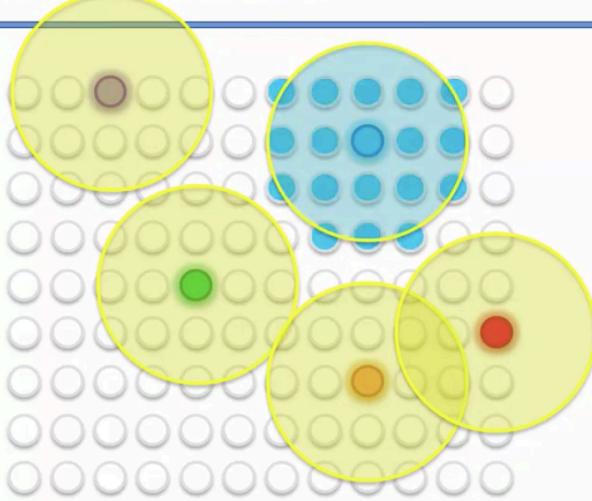
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

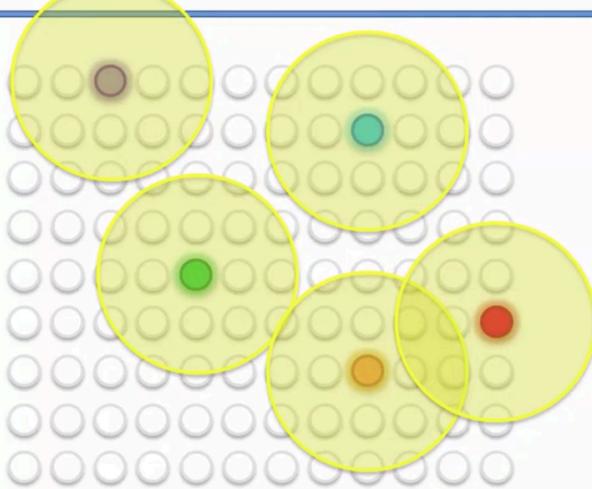
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

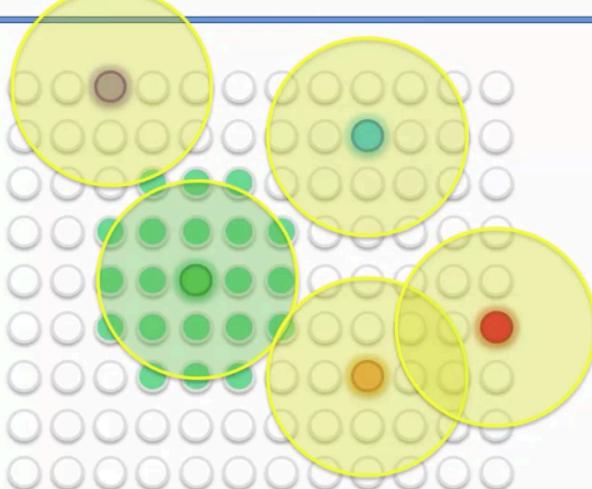
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

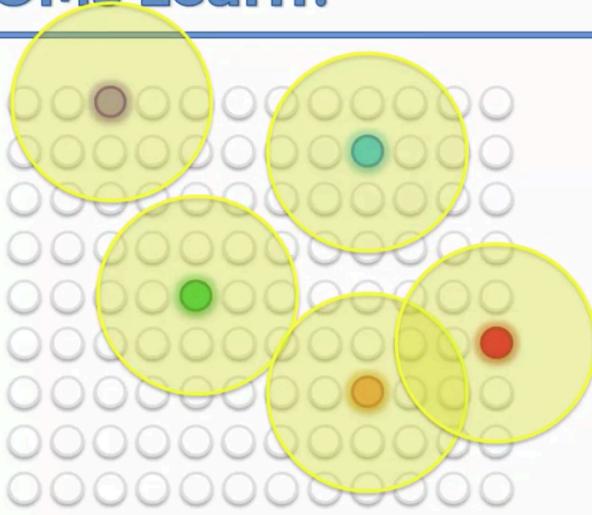
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

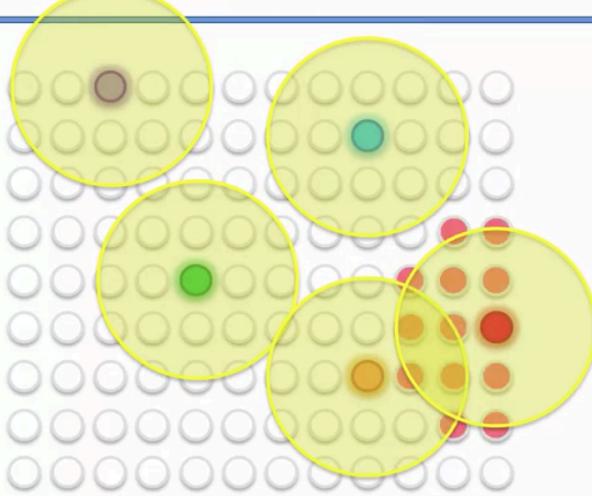
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

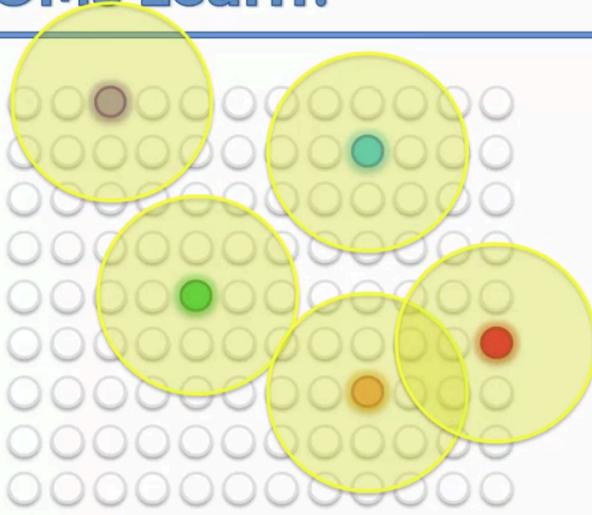
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

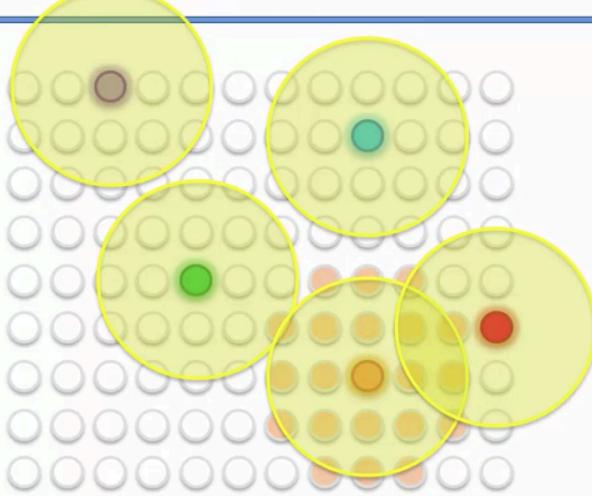
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

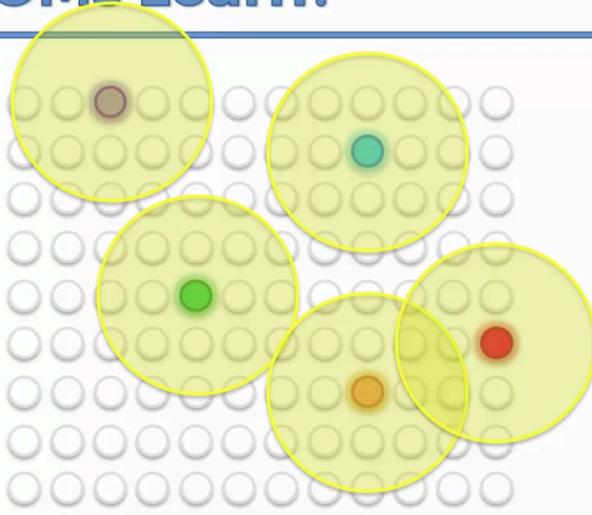
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

How Do SOMs Learn?

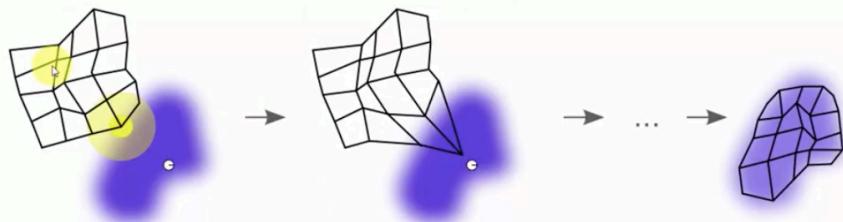


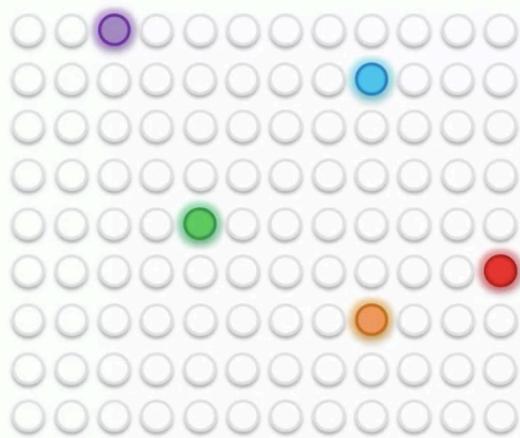
Image Source: Wikipedia

Deep Learning A-Z

© SuperDataScience

the second picture is our second iteration.

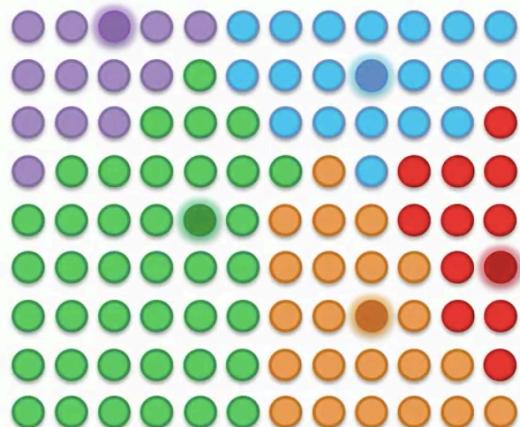
How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

How Do SOMs Learn?



Deep Learning A-Z

© SuperDataScience

Through lots of and lots of iteration, our self-organize map look like this.

How Do SOMs Learn?

Important to know:

How Do SOMs Learn?

Important to know:

- SOMs retain topology of the input set

As we could see from the picture, the map is slowly becoming like a mask of the data. The data might have some topology and SOM will do everything it can to be as close to data as possible.

How Do SOMs Learn?

Important to know:

- SOMs retain topology of the input set
- SOMs reveal correlations that are not easily identified

When we have lots and lots of column, it becomes so challenging to assess any correlation.
But in SOM we can see the correlation so easily in a map.

How Do SOMs Learn?

Important to know:

- SOMs retain topology of the input set
- SOMs reveal correlations that are not easily identified
- SOMs classify data without supervision

It doesn't need any label.

How Do SOMs Learn?

Important to know:

- SOMs retain topology of the input set
- SOMs reveal correlations that are not easily identified
- SOMs classify data without supervision
- No target vector -> no backpropagation

Since there is no supervision then, there is no process of back propagation.

How Do SOMs Learn?

Important to know:

- SOMs retain topology of the input set
- SOMs reveal correlations that are not easily identified
- SOMs classify data without supervision
- No target vector -> no backpropagation
- No lateral connections between output nodes

This means that, there is no neural network type of connection, no activation functions and so on.

How Do SOMs Learn?

Additional Reading:

Kohonen's Self Organizing Feature Maps

By Mat Buckland (2004?)

Link:

<http://www.ai-junkie.com/ann/som/som1.html>

